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ABSTRACT

This practicum was designed to increase middle-level teaching teams' understanding of cognitively guided instructional strategies or brain-based learning theories and to promote the incorporation of these strategies into the teaching of cross-curriculum thematic units. Twelve staff development modules based on a new perspective of learning which has surfaced in theory and research in cognitive psychology were developed and implemented. Analysis of the survey and interview data revealed that middle-level educators who were consistently involved in staff development sessions discussed the meaning of cognitive instruction, implemented more strategies within their classroom, and demonstrated understanding of cognitively guided instructional strategies' relationships to curriculum integration. Appendices which compose more than half of the document include definitions of terms, the survey instruments, modules, thinking logo, and hypermedia project of learning disabled students. (Contains 56 references.) (EH)

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Does Staff Development in Cognitively Guided Instructional Theory Change Middle School Teachers' Mental Models about Teaching and Learning?

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Cluster 56

SO 027 992

A Practicum I Report Presented to the
Ed.D. Program in Child and Youth Studies
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Education

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Kim Ehrhardt
Kim Ehrhardt

Principal of Franklin Middle School
Title

450 North Crosby, Janesville, WI
Address

June 24, 1994
Date

This practicum report was submitted by Judith R. Schmitz under the direction of Dr. Roberta Silfen. It was submitted to the Ed. D. Program in Child and Youth Studies and approved in partial fulfillment of the requirements for the degree of Doctor of Education at Nova Southeastern University.

Approved:

8-30-94
Date of Final Approval of Report

Roberta Silfen mes
Roberta Silfen, Ed.D., Adviser

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ABSTRACT

Does Staff Development in Cognitively Guided Instructional Theory Change Middle School Teachers' Mental Models about Teaching and Learning? Schmitz, Judith R., 1994: Practicum Report, Nova Southeastern University, Ed.D. Program in Child and Youth Studies. Middle Level Education/Co-Teaching Teams/Brain-Based Learning Theory/Cognitively Guided Instructional Strategies/Staff Development Sessions

This practicum was designed to increase middle level co-teaching teams' understanding of cognitively guided instructional strategies or brain-based learning theories and to promote the incorporation of these strategies into the teaching of cross-curricular thematic units, thus raising pre-adolescent and young adolescent achievement. In so doing, a secondary requisite was to improve teachers' attitudes and students' satisfaction about teaching and learning.

The writer developed and implemented twelve staff development modules based on a new perspective of learning which has surfaced in the theory and research in cognitive psychology. The research suggested implications for a changing middle-level curriculum where middle school experts recommend that curriculum be organized around thematic units whose topics are based upon young peoples' interests, concerns, and experiences. Central to this theory was understanding a brain-based approach to learning which embraces cognitively guided strategic teaching methods in order to enhance youngsters' inter- and intrapersonal learning styles.

Analysis of the survey and interview data revealed that middle-level educators who were consistently involved in the staff development sessions discussed the meaning of cognitive instruction, implemented more strategies within their classrooms, and demonstrated understanding of cognitively guided instructional strategies' relationship to curriculum integration. Although some staff members cited changes in building leadership and building construction as possible reasons for a decline in educational climate, the overall consensus was that the total educational climate of the middle school where this study took place was positive.

* *

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CHAPTER I

INTRODUCTION

Description of the Community

The writer lives and works in a largely white Midwest community that covers 24.102 square miles. Since 1950, the city has been one of the most rapid-growth communities in the state and currently boasts a population of approximately 53,000. It is located less than two hours by auto from four major, culturally-rich cities. It is also the seat of county government.

Government and Community Facilities

The municipal government provides a wide array of public services and facilities at one of the lowest per capita costs and public employment for comparable cities in this state and the Midwest. The community has utilized the city council-manager form of government since 1923. The city council is comprised of seven members elected at large.

The fire department employs 86 personnel; the police force operates with 76 officers and 27 civilians. The city's crime rate, based on an average per 100,000 population, consists annually of 6,148 property crimes and 156 violent crimes.

Community facilities are plentiful. There are two medical centers with 85 physicians and surgeons and a 240-bed hospital complex. Currently, construction is underway at the hospital to complete both a regional heart and cancer center. Eight nursing homes help comprise the city's health-care facilities.

The community also supports 48 Protestant and four Catholic churches, and the city's public library must be mentioned which maintains a collection size of 212,555 and a circulation among 652,022 customers.

Labor and Industry

The city is home to over 90 manufacturing companies, ranging in size from five employees to 5,800. Over 70 of the firms are non-union. Twelve of the largest manufacturers in the community produce such commodities as autos and trucks, pens, powder metal products, safety equipment and supplies, machinery, pile fabrics, thermoform plastics, glass etching, canned vegetables, and mattresses/sofa sleepers. The city is geographically located to serve growing markets and is highly accessible via all modes of transportation - highways, rail, and air.

The majority of this city's population includes middle class families due to the sizable proportion of blue collar workers. Extreme populations, those who earn wages in excess of a million dollars annually and those who barely earn the minimum wage at an hourly rate, live in the community as well. The medical practitioners, lawyers, corporate heads, and schoolteachers comprise the majority of professional workers; whereas, one ward of the city's 15 contains a population of impoverished, unemployed, and a percentage of minority cultures. Hourly wage rates vary from approximately $12.00 for skilled workers, $11.00 for semi-skilled employees, $9.00 for office workers, and $6.50 for unskilled laborers.

The total civilian labor force is approximately 73,000 with nearly 3,800 persons who are unemployed. The unemployment rate alters between 4-6%; however, as recently as 1990, it jumped to over 12%.

Sales taxes, corporate income taxes, and unemployment compensation taxes as well as property taxes levied in the city are among the lowest in the region. The community promotes itself as a place to actively do business through cooperative and team approaches.

Confidential assistance is consistently available for financing, for buying personal and business sites, and for providing information about state and local taxes, the labor market and public infrastructures. The community is served by four banks and five savings and loan institutions.

Education

Educational opportunities in the city are rated as assets. Elementary and secondary education, vocational and technical education, and college and university education are available in the community. Besides the 16 public schools, there are five Protestant and four Catholic elementary schools, a state K-12 school for the visually handicapped, a vocational-technical-adult education college, and a state university center within the city. Two private colleges and two state universities are located within a 40-mile radius.

Writer's Work Setting and Role

The public school district educates a population of approximately 10,000 youngsters, ages three through post-secondary. There are eleven elementary schools, three middle schools, and two high schools in the community. Each elementary school has an enrollment of between 350 and 450 students, the middle schools house approximately 800 students each, and both high schools each enroll nearly 1500 students. One of the elementary schools houses the majority of the multicultural population; these students "feed into" each of the three middle schools so that both high schools enroll culturally diverse students as well.

District Description

The school district, like most medium-sized public school organizations, provides K-12 education with related services and alternative programs. There is a child find screening program for 2½ to 3½ year olds which educates families in regard to normal growth and development and available community resources. These Child Development Days identify the children who qualify for further assessment in any area of exceptional education need (EEN). The school district also offers preschool classes, gifted and talented, at-risk and special education programs. In accordance with the federal law, P.L. 94-142, the district affords EEN programming for the following handicapped conditions: cognitive disabilities, vision and hearing impaired, speech and language difficulties, learning disabilities, and emotional disturbance. In 1985, the school district recognized the need for an alternative program for severely emotionally disturbed students at the middle and high school level. A major reason for developing such a program was to reduce disruption in the school environment and yet maintain students in a community-based program.

The district is in compliance with state mandates on talented and gifted criteria, procedures, and programming. The elementary and middle school at-risk program includes Chapter 1 classes along with free breakfast and lunch programs. The high school at-risk program incorporates a School-Within-a School (SWS) philosophy which aids students with attendance problems related to drugs and alcohol.

The school district emphasizes equally health and vocational education as well as college-bound and advanced placement classes. The fine arts areas are well-defined with music, art, and drama courses. Extra-curricular activities are numerous. The school district employs counselors, psychologists, social workers, speech and language therapists, occupational and physical therapists, adaptive physical education teachers, and paraprofessionals at all levels. There is a strong staff development component in place as well as dedicated administrative leadership and support.

Writer's Work Role

Currently, the writer's position in the school district is titled Exceptional Educational Needs Program Support Teacher. In this capacity, the writer works primarily in the field of special education as a facilitator of curriculum and instruction in seven of the district's sixteen schools. The job role includes supporting personnel at both high schools, all three middle schools, and two elementary schools. Acting also as a liaison between special educators, classroom teachers and administrators, the writer is involved in developing curriculum, inservicing, evaluating students, communicating with families, their teachers and principals, collaborating on various committees, solving problems proactively, and mediating conflicts.

The job expectations also include writing for a variety of reasons: daily and weekly agendas, meeting syllabi, curriculum and inservice materials, student evaluations, school and committee reports, and letters to parents, community agencies and publishing companies.

As a veteran educator with twenty-five years of K-12+ teaching and supervisory experience, the researcher has training in both general and special education. The current position of Special Education Program Support Teacher provides the writer opportunities to broaden and heighten leadership, facilitative and curriculum experiences.

Briefly, the researcher has a career history of achievement in almost every facet of the employee-relations area. The writer has:

a. instructed elementary, middle-level, and secondary students in the field of special education with cognitive, learning, and behavioral disabilities;

b. instructed elementary, middle-level, and secondary students in general education through team-teaching experiences;

c. assessed and diagnosed students at all levels through the M-Team and IEP process (See Appendix A for definitions);

d. directed and serviced special educational curriculum and inservice committees as well as worked on building-level committees;

e. trained and supervised undergraduate and graduate students in the fields of cognitive and learning disabilities;

f. facilitated and instructed teachers in a professional development non-traditional M.Ed. program; and,

g. co-authored published educational books, presented these academic materials at conferences, and conducted similar inservices in the Midwest.

The writer looks forward to future opportunities to make contributions to the school district in terms of changing curriculum practices and teaching methods within the movement of school reform and restructuring. During the 1993-94 academic school year, the researcher spent the majority of time working with secondary teachers and administrators. The change theory and curriculum implementation plan presented in this proposal are directed toward secondary curriculum reorganization.

Writer's Specific Role in the Practicum Setting

The practicum setting, then, was one of the school district's three middle schools. This middle school serves a median and low income, largely white population of 750 students, Grades 6-8. For the practicum project, the middle school principal and co-teaching teams of general and special educators were involved. Two sixth grade instructional teams, one seventh grade and one eighth grade team were the focus of the writer's study. Approximately 250 general education and 55 special education students in the co-teaching teams were also indirectly involved in the implementation of this project. The writer's specific role was to design, implement, and evaluate inservice modules for general and special educators in order to demonstrate the effects cognitive strategy instruction or brain-based learning had on all students when incorporated into the teaching of cross-curricular thematic units. (See Appendix A for definitions of terms). Additionally, in order to evaluate the effectiveness of the inservice sessions, teacher implementation of strategies was evaluated.

Teachers were introduced to goals, objectives, expectations, and outcomes of the staff development sessions during a pre-meeting discussion. This staff development project was titled "Beyond Effective Teaching" and was meant to equip teachers with new knowledge about the teaching-learning process. A significant aim of the program was to help teachers better deal with the diverse needs of young adolescents. The models explored centered on content and the strategies required to make learning meaningful, integrated, and transferable.

The effort involved a series of strategy sessions conducted after school between November, 1993, and April, 1994. Up to three meetings were held during team planning time in order to meet in small groups. Teachers were expected to apply the cognitive strategy demonstrated from different inservice modules with a specific group of students. They were requested to develop learning activities in response to the project. Video tapes, interviews with the principals and teachers, and student "thinking logs" constituted as qualitative measures of evaluation. The writer's own participative observation and interaction in the project also served as an evaluative mechanism.

CHAPTER II

STUDY OF THE PROBLEM

Problem Description

There was a time when formal education was primarily an acquisition of knowledge. Other institutions and aspects of life dealt with behaviors and attitudes, and the teacher's knowledge was the best and sometimes the only source of information. Public education, currently, has new responsibilities - lifelong learning, personal development, character formation - that cannot effectively be carried out in a system and by a curriculum that was designed for transmitting prescribed knowledge. Instead, one's ability to learn now outweighs the facts of knowledge one has accumulated. When developing the middle school curriculum, this must be the first consideration.

District Restructuring Efforts

The school district acknowledged the changing society and students at risk by engaging in restructuring efforts and school reform. A district K-12 Interdisciplinary/Integration Task Force, of which the researcher was a member, developed a revised decision-making model that promoted cross discipline planning and delivery while maintaining the status of discipline-based curriculum committees. The committee defined integration, observed and discussed current integration projects in the school system, reviewed integration models, and described a district model of purposes and goals for implementation processes. The committee's final task, by November, 1993, was to develop a position paper that confirmed the direction of the school district's curriculum reorganization activities. The concepts of this paper, then, were to be utilized by the discipline-based curriculum committees when determining appropriate standards for learning and achievement at all levels.

Background of Middle School Needs

The need that existed in the middle school setting focused on how to implement a holistic and integrative educational approach with middle level students. To support and enhance students' learning, identified goals and expectations must be appropriate to their cognitive abilities. From a constructivist perspective, middle level curriculum developers consider child development. The constructivist viewpoint states that students should be taught to build relationships by connecting newly learned information with prior known concepts. Brooks (1987) believes most "curriculum development occurs with little or no attention paid to the developmental abilities of children. It is for this reason that much of what is taught to children is not learned by them" (p.65).

The brain resists isolation and unrelated bits of information; "for teaching to be effective, students must be able to create meaningful and personally relevant patterns" (Caine & Caine, 1990, p.67). This type of teaching is recognized by those advocating whole language, experiential, thematic, and integrative approaches to learning. Thus constructivist perspectives such as teacher and student reflection, metacognitive techniques, reciprocal teaching, cooperative learning, and the use of scaffolds for teaching cognitive strategies are approaches to encourage young adolescents to construct a broader and deeper understanding of themselves and their world. Brain-based learning and cognitive strategies, then, guide the middle school movement and should surface in integrated curriculum practice. (See Appendix A for definitions of terms).

Middle level academic and exploratory instructional teams needed to improve their understanding that cognitive strategies, when incorporated into the teaching of cross-curricular thematic units, is an effective teaching practice which increases pre-adolescent learning. Middle level students are unlike any other age group. Even more significant, they are more unlike each other than any other age group. Therefore, identifying and preparing middle level curriculum required new elements and a new structure, and it presented a unique challenge.

A key informant interview with the middle school principal, who possessed specialized knowledge on the positive effects of cognitively guided instruction through curriculum integration, revealed the instructional staff often felt insecure about the research in cognitive psychology that suggests changing middle level curriculum. The principal noted that middle level educators must recognize that, although students may be working toward the same outcomes, some take longer to get there and need extra support. He also maintained that teachers must allow students who meet the outcomes more quickly to move ahead to new challenges. As the middle level curriculum developed at the building level, the principal claimed that three facts be recognized.

1. All students do not need the same learning to the same extent.
2. All students do not need the same learning at the same time.
3. Learning success cannot be realistically measured with a single performance assessment.

Beane (1990) focuses attention on the middle school curriculum question:

> ... if the middle school is to be based on characteristics of early adolescence, then the curriculum ought to be redesigned along developmentally appropriate lines rather than a slightly revised version of the traditional high school curriculum ... Being sensitive to early adolescent characteristics is only part of reform. The how-to-teach question must be accompanied by a what-do-we-teach-and-learn question (p.6).

Interviews with teachers indicated that changing to an integrated middle-level curriculum which would incorporate cognitive instruction or brain-based learning would require additional work. Some felt that rearranging and compacting curriculum objectives would jeopardize or "water down" the unique content of their subject area and would not be in the best interests of young adolescents. Also, a teacher-made survey conveyed the majority of instructional staff was not knowledgeable about cognitively guided instructional strategies and how they related to integrated curriculum. The survey hypothesized that some attitudes were negative and that communication within and between instructional and exploratory teams was not always collaborative or creative. Teachers were dichotomous about what a "new" middle school curriculum should be.

Some middle level educators did not understand that to work successfully with students, they must recognize the dominance of the brain. Incredulously, they continued to force students into factory-like cells and traditional memorization of facts. Hart (1993) explains that because of this, our "conventional schools have been proven to be actively brain-antagonistic ... but that (educators and psychologists) know amply enough to bring about instructional environments that, being brain-compatible, would produce huge gains in (student) learning" (p.5).

The Specific Problem

The need, then, as it currently existed in this middle school setting, was to increase co-teaching teams' understanding of cognitively guided instructional strategies or brain-based learning theories and to promote the incorporation of these strategies into the teaching of cross-curricular thematic units, thus raising pre-adolescent achievement. In so doing, a secondary requisite was to improve teachers' attitudes and students' satisfaction about teaching and learning.

The specific problem was to answer the following question: Does staff development in cognitively guided instructional theory change teachers' mental models about teaching and learning?

Problem Documentation

The researcher authored and conducted a curriculum integration survey to show evidence that supported the existence of the problem. The entire middle school faculty was surveyed in May at the conclusion of the 1992-93 academic school year.

Out of a total of 64 certified staff, 34 completed and returned the curriculum integration survey. The results of 32 surveys were informally compiled; two surveys were incomplete. Thirty surveys were not returned. Appendix B includes a memorandum to the faculty in regard to integrated curricular themes and a copy of the "Curriculum Integration Survey."

The following documentation proved that middle school co-teaching teams needed to improve their understanding of brain-based learning theories and how cognitive instruction relates to curriculum integration.

Survey Comments about Administration

On the survey category titled "administration," 26 out of 32 teachers felt administrators set high standards, provided good examples, and talked with teachers and students concerning integration rationale and themes; 24 teachers were not sure that administrators talked with parents about curricular changes. Six people commented that administrators did not provide enough time for planning integrated curriculum.

Survey Comments about Student Academic Values

On the category titled "student academic values," 22 out of 32 teachers acknowledged that students were not interested in learning through lecture and note-taking methods and that they wanted to have fun while learning. Twenty-eight teachers felt that students were interested in learning through interactive methods. Answers were scattered in regard to the amount of effort students put forth on interdisciplinary versus departmentalized curriculum. Nine teachers felt that students worked to the same degree of involvement on different types of curriculum, but 11 teachers did not and 13 respondents were undecided.

Actually, the need and relevance for the change to curriculum integration is rooted in the research on middle level curriculum, effective teaching principles, and brain-based learning theory. Numerous middle school students saw subject areas as separate bodies of knowledge with little relationship to one another. However, middle level experts, James Beane (1993) and Conrad Toepfer (1992) assert that integration allows students to learn relevant knowledge in a cohesive manner. They also agree that the curriculum becomes relevant when there are connections between subjects; integration can avoid polarization and encourage active linkages between fields of knowledge. Curriculum integration encourages teachers to team together so they will view students' capabilities and needs from a multi-dimensional perspective. Integration permits teachers to change their approach to teaching and learning; this change focuses specifically on learning, not teaching (Hunter, 1986; Johnson & Johnson, 1989). The teacher is not just a deliverer of information, but a learning facilitator. Finally, the human brain naturally searches for common patterns and connections (Hart, 1989). Therefore, curriculum integration guides students to use common processes within and across the relevant subject areas; students are allowed to develop the ways of thinking that are used to problem-solve in every field of learning (McCarthy, 1987). They also become aware of different ways of perceiving any person, place, object, or event. Students can better integrate strategies from their studies into the larger, multifaceted world (Beane, 1993).

Survey Comments about Student Behavior

On the survey category titled "student behavior values," only eight teachers said that students worked hard on non-interactive assignments and that students were considerate of one another. Fifteen teachers noted that students behaved well during classtime, enjoyed learning, and liked their teachers. On the category titled "teacher-student relationships," 26 out of 32 teachers confirmed enjoying their work and students; however, only 18 divulged that teachers taught to various learning styles, treated students as individuals, and were consistently fair to students.

William Glasser (1992) insists that student behavior is affected by coercive boss-management in the classroom. He also notes that schools, during restructuring efforts, have worked hard to become quality schools by changing to noncoercive leadmanaging. Yet, students are still rebelling by being adversarial to their teachers and by acting inconsiderately and competitively toward peers.

> The teachers fail to see that students are not rebelling against them and their efforts to become lead-manager; they are rebelling against a curriculum that lacks quality. Therefore, if we want to create Quality Schools, we must stop all coercion, not just some, and one way to do this is to create a quality curriculum (p.691).

Survey Comments about Knowledge Base of Cognitively Guided Strategies

On the category titled "teacher knowledge base of learning theories," 23 teachers declared their knowledge about the rationale of integrating curriculum; however, 13-15 disclosed little knowledge about cognitively guided instructional strategies. Ten to 12 teachers reported indecisiveness about their knowledge of constructivism, scaffolding, reciprocal teaching techniques, or collaborative problem-solving. Sixteen teachers agreed they would be interested in being trained in cognitively guided instructional strategies and how they relate to curriculum integration. Thirteen were undecided, and three objected to such inservice training. Fourteen teachers expressed interest in Bernice McCarthy's 4-Mat training, an approach that teaches the significance of using brain-based learning theories along with awareness of learning styles when planning curriculum. Sixteen people revealed their indecision, and two denied interest in such training.

Brown (cited in Reid & Stone, 1991) specifies that schooling presently is needed to develop "intelligent novices, persons who can independently find, select, evaluate, and master information from the vast quantities being generated annually in nearly every knowledge domain" (p.8). The program to produce intelligent novices addresses a new approach to learning and teaching, recently described as cognitive instruction. The philosophy of cognitive instruction, opposite the behavioral approach that was strongly advocated during the past quarter century, is one that views students as active, apprentice learners. "Students are no longer regarded as empty vessels to be filled with knowledge" (Reid & Stone, 1991, p.8); instead they are participants in goal-oriented, collaborative activities. Classrooms are becoming laboratories where "apprentices seek to imitate the behaviors of the experts with whom they are engaged" (p.8). Mental or cognitive strategies are demonstrated, discussed, and utilized in a social and meaningful context. Correct answers are no longer significant; instead an emphasis on critical thinking and effective self-monitoring is the demand. Learning is addressed holistically as students ascertain when their strategies are productive or not.

Bernice McCarthy's (1987) 4-MAT instructional model is developmental, cyclical, and useful for all teaching levels and content areas. It is a technological model based on learning styles, hemisphericity, art creativity, and management training. It capitalizes on four major learning styles - direct experience, reflective observation, abstract conceptualization, and active experimentation - and also uses right and left mode processing strategies which lead to whole-brained instruction. The 4-MAT System draws upon research from different fields: John Dewey in education, Carl Jung and Kurt Lewin in psychology, David Kolb in management, and David Merrill in personnel training.

Expressive Comments by Middle Level Teachers

Staff members were also given the opportunity to write comments on their curriculum integration survey. The following quotes indicated a need for the faculty to examine the practices of cognitive instruction and why cognitive inventions are effective within the context of curriculum integration. The quotes illustrated, as well, a need for working toward more positive teacher attitudes about teaching and learning.

1. "Teacher attitudes and practices are dramatically diverse."
2. "Students don't like interdisciplinary curriculum; they get sick of the same thing in each class."
3. "The formats aren't as important as getting time to work with and plan with other teachers - a common statement from this year's inservices."
4. "Student behavior values are variable - some do not behave well during class time; they don't enjoy learning nor do they like their teachers."

5. "Teachers are also variable in the way they treat students - students aren't always treated as individuals nor are they consistently praised."
6. "I would have answered some of these questions more positively if it were my own personal ideas or needs surveyed. I assume you wanted a general response."
7. "This is a very poor survey, a slanted joke!"
8. "To ask if students want to have fun in school is a weird concept."
9. "Students do not work hard on assignments because it's not expected of them anymore."

According to Ornstein (1981), strategies to move toward true professionalism exist. Cooperation rather than competition is certainly a key concept.

Causative Analysis

Integrated middle school curriculum has, as its goal, teaching for understanding as opposed to giving students exercises, drills, and facts that result in hopefully correct test answers. Integrated middle school curriculum emphasizes, also, a change from the teaching of isolated skills and concepts to the modeling of cognitive strategies which provide experiences in higher-order thinking. Such a paradigm shift was the major cause of this middle school's problem. Further analysis of the problem suggested that traditional attitudes about how to teach were prevalent and slow to change.

Causes of the Problem Described by Middle School Principal

The principal conveyed that teachers' past educational experience accepted the viewpoint that teaching is a process of dispensing information. The teacher moves from student to student, filling each mind with the facts of the lesson. When a well-taught lesson is completed, all students have the same knowledge and understanding of the content. The principal also observed that middle school teachers lacked information in regard to the different perspective on learning that has surfaced from the research in cognitive psychology. The National Middle School Association

(NMSA) (1993) believes counter-productive conditions prevail in present-day middle schools which should no longer be in existence. First, faculty organized by departments who teach the curriculum in separate subjects and skills has been a longtime stabilizing agent that must be changed. Next, the fact that the content of learning is thought to be more significant than the process of learning is another consistent, traditional concept that opposes effective teaching principles. Madeline Hunter (1986) points out that many teachers "drive the car away without their passengers." The idea that "more" content is "better" results in frustrating many students and makes much learning irrelevant. Furthermore, textbooks, worksheets, lectures, and rote memorization which predominate middle level curriculum should be only one quadrant of a teaching, learning repertoire (McCarthy, 1987). Because exploratory courses are isolated from academic subjects and viewed as less important, society perceives that education is more scientific than artistic. Eisner (1990) confirms that the content areas stressed in schools have been extremely endurable: English, Mathematics, Science, Social Studies, Foreign Language, Art, Music, and Physical Education most often emphasized in that respective sequence. "Why? Part of the reason is tradition. We do what we know how to do ... Subject-matter specialists protect their turf ... Textbooks, which define the content and shape the form in which students encounter that content, serve to resist change" (p.525). Lastly, the NMSA claims that students who are labeled and tracked into rigid ability groups no longer serves the integrative, strategic, affective middle level philosophy and environment.

Causes of the Problem Described by Middle Level Teachers

Discussions with middle school teachers also signified traditional attitudes toward teaching methods. First, they reported that integrating curriculum with other disciplines slows down the teaching process to the extent that they were unable to cover all material presented in the core-subject curriculum guides. Teachers also protested that they were not provided with enough planning time which is required to successfully implement cross-curricular thematic units.

Lortie (1975, p.230) stresses that "one cannot undo centuries of tradition with a few simple alterations." He notes that teachers, for the most part, have unconsciously internalized the methods of their own teachers. "Those who teach have normally had 16 continuous years of contact with teachers and professors. In fact, young people see teachers at work much more than they see any other occupational group" (p.61).

Lortie further maintains that universities who prepare teachers need to foster personal flexibility and versatility in training experiences since these are important qualities for the future. Students who prove incapable of change should be encouraged to enter other lines of work. In the past, Lortie's (1975) interviews with educators verified that teacher preparatory courses and fieldwork were not "designed to expand students' ability to cope with ambiguity and complexity nor to acquaint them with a wide variety of teaching approaches" (p.230).

Eisner (1990) laments how teachers with limited planning time and limited contact with their professional colleagues are not likely to redesign curriculum content. The changes teachers do make are only within the courses they teach, and of course, these classes operate within the traditional school setting. "In a conservative educational climate, such as we have today, the difficulty of substantially altering curriculum content is great" (p.525).

Finally, middle level teachers confirmed that they did not perceive the significance or results of teaching cognitively guided or brain-based learning strategies such as reciprocal teaching, scaffolding, collaborative problem solving, or modeling metacognitive self-talk. Bagley and Hunter (1992) specify that the educational reform agenda of a constructivist and cognitive processing view of learning must have a "synergistic interrelationship" with uses of technology in the school curriculum. In order for curricular reform to be most effective at the middle level, a change in our view of the way students learn and the approaches used in teaching must be linked to reflect the diverse needs of pre-adolescents.

Relationship of the Problem to the Literature

At present, there simply is no middle school curriculum, only a collection of separate curricula; and attempts to integrate learning in middle level programs are restricted by this separate subject organization (Lounsbury, 1991; Toepfer, 1992). A review of the literature confirms there is a case for thinking in a new way about middle school curriculum.

Foundation for Implementation of Cognitive Instruction during Curriculum Integration

Beane's (1993) research on middle level curriculum describes the "indelible image" of the junior high school model. Knowledge was disseminated by teaching different subjects with isolated, disconnected fragments of information and skill.

> Throughout the day, students would move from one subject to another, each one neatly defined and separated, concentrating their minds on that particular subject at that particular moment. When the bell rang, students would turn their attention to another subject, another teacher. The boundaries were drawn ... (p.10).

Beane also illustrates a metaphor to help educators see what was, and presently is, wrong with this "junior version of the high school model." Imagine a pile of jigsaw puzzle pieces and students being told to put them together; no doubt they would first ask to see the picture they make. It is the whole picture that gives meaning to the puzzle and assures students that the pieces fit together, that none are missing, and that there are no extras. Without the whole picture, students probably would not want to bother with the puzzle. Ironically, this situation is very much like what young people are asked to do in school all the time. To pre-adolescents, the typical curriculum presents endless facts and skills that are unconnected and disjointed. That they might be connected or lead toward some whole picture must be taken on faith or the word of adults. Like working the jigsaw puzzle without the total picture, students can only trust that the pieces do make the whole, that they fit together, and that there are just the right number of combination pieces.

A different perspective of learning has surfaced from the research in cognitive psychology. This view, called brain-based learning theory or cognitively guided instruction, sees learning as a highly interactive process of constructing personal meaning from the information available in a learning situation and then integrating that information with what students already know to create new knowledge (Caine & Caine, 1990). Educators who become aware of how the brain learns, including programs on learning modalities and hemispheric differences, can gain ideas to enhance the quality of instruction and to optimize student learning. (See Appendix A for definitions of terms).

Toepfer (1992) asserts that pre-adolescents are able and capable learners and that early adolescent cognitive development can be accommodated by an approach that helps students see the interrelationship of all curriculum in the middle level program. Instructional activities must be useful, meaningful, and performance-based so that students' intellectual development is facilitated. Beane (1993) agrees that, at this age, the brain learns best through the implementation of a holistic educational approach. Therefore, using topical themes to integrate instruction brings middle level educators closer to the real-life situations that pre-adolescents encounter. Topics would consist of personal concerns and experiences of students, then be associated and linked to the wider importance of the social science areas.

Challenging educators to curtail the practice of passive learning and to organize learning around the daily needs of young adolescents could be accomplished through flexible groupings based on skills, concepts, or interests of students together with a collaborative, interdisciplinary teaming approach (Toepfer, 1992). The task is to reconceptualize the curriculum and identify program elements adequate to the wholeness of learner needs. Assuredly, existing curriculum qualities such as heterogeneous groupings, cooperative learning, co-teaching, and working directly with student self-esteem are still appropriate. Additionally, however, other components must be developed to replace those which are put aside. Teachers have learned about different models designed to integrate curriculum; therefore, they possess the knowledge base to develop and implement their own integrated learning experiences initiated by student needs and interests. Concurrently, teachers will help students become the best thinkers they can be at the pace and rate their potential and developmental readiness will allow (Council on Middle Level Education, cited in Toepfer, 1992).

Caine and Caine (1990) offer twelve brain principles to guide educators in designing appropriate programs for young adolescents. The Caines' research states that the brain

> performs many functions simultaneously. Thoughts, emotions, imagination, and predispositions operate concurrently ... Learning is influenced by the natural development of the body and the brain. According to brain research, there can be a five-year difference in maturation between any two average children. Gauging achievement on the basis of chronological age is therefore inappropriate (p.66).

Consequently, organizing curriculum by themes would reposition subject matter from separate, departmentalized areas to holistic, infused, and interconnected approaches.

Understanding how the brain learns has implications for the use of cognitively guided instructional strategies in the development and design of middle level curriculum. The "objective of brain-based learning is to move from memorizing information to meaningful learning ... Acknowledging that the brain learns from (holistic) experiences will help (teachers) understand meaningful learning more fully" (Caine & Caine, 1990, p.69). Thus, brain-based learning and cognitive strategies provide substance for curriculum practice. "If the growing curriculum conversation is any indication, middle level educators are finally on their way to making rhetoric a reality" (Beane, 1993, p.14).

Historical and Contemporary Perspectives of Social Constructivism

According to John Dewey (1938), a revised curriculum would not be fixed or mastered through drill; it would not be the climb to a degree or a promotion; the curriculum would not be required classes arranged to cover a specific syllabus; and it would not be authoritarian control of children's behavior in each class. Instead, the revised curriculum would be worthwhile and practical. Based on Deweyan suggestions, the following list outlines what young people should study:

1. The skills of social literacy - reading, writing, numbers, signs, following written and oral directions.
2. Communication skills - oral expression, the ability to understand others, to be responsive and assertive.
3. Our rational values, our historical and economic structures.
4. Family heritage and acceptance of ethnic and religious diversities.
5. Mechanical literacy - knowledge of basic machines such as the computer, TV, autos.
6. Self-management - health care, budgeting, earning a living, home economics.
7. Art forms - music, dance, theater, architecture, literature.
8. Team and individual sports and recreational activities.
9. The natural environment.
10. Coincidences, intuition, dreams and fantasies.

Along the same lines, contemporary curricularists state that today's students need to be prepared for the next century. Keitz (1987) proposes that a nontraditional curriculum must address five trends that are currently affecting the lives of our children - a changing population, a changing family structure, a changing economic base, a changing environment, and a changing society. She further maintains that the nontraditional curriculum must incorporate the "skills students will need to lead productive lives in a future shaped by these trends" (p.69). The skills identified were critical thinking, human relations, personal, and societal skills. In Keitz's School District of Anchorage, Alaska, the impact of social change on students' lives was assessed through a study entitled "Forward to the Basics: Teaching for Today and Tomorrow." From this assessment, curriculum was transformed from a fragmented to a holistic process, and disciplines were linked with skills for critical thinking and humanistic living. Curriculum integration confirms alignment with Dewey's (1938) subject-matter of education, that the social life of students gives unity for their efforts and that the true center of school subjects is not on science, nor literature, nor history, nor geography, but on the learners' activities.

Ganapole (1989) outlines nontraditional middle level curricular implications from contemporary constructivist theory. Learners must integrate new knowledge into their cognitive systems. For these associations to take place, there must be an emphasis on feeling, acting, and experiencing so the new information is connected to prior knowledge and applied to new situations. Ganapole presents an eight-step framework to guide teachers through the process of curricular design in which "higher level thinking skills are integrated with content drawn from multiple disciplines" (p.82). The concept again emphasizes Dewey's subject-matter of education based upon human relations, personal and societal actions.

- Step one is topic selection, a thematic approach to curriculum design, which focuses on selecting developmentally appropriate content.
- Step two describes a webbing process which aids teachers and their students to identify problems, issues, questions, and interests related to the topic or theme. To include students in the process of curriculum planning is crucial.
- Step three describes a categorization process which helps teachers see the entire scope and sequence of the intended unit. Categorizing provides teachers the opportunity to give curricular balance to the unit.
- The next three steps involve teachers in planning language, creative arts, and thinking skill activities they wish to emphasize throughout the unit.
- Step seven deals with locating appropriate materials on a strand (subject-matter) basis. For each strand, teachers should locate reference books, fiction and nonfiction books, below grade-level and advanced textbooks.
- Step eight focuses on developing "double agenda" activities which merge process with content. Activities that reflect student interests, abilities, and talents need to be taken into consideration and can best be achieved when students are again involved in this stage of planning.

Cross-Curricular Planning Wheel With Integrated Activities

Figure 2-1 provides integrated curriculum, using Ganapole's model, in the context of a science strand. The theme is oceanography, a seventh grade unit of study, presented by a 1992-93 co-teaching team in the middle school where the writer will conduct this practicum's action research. Activities show how content, language, creative arts, and thinking skills are successfully integrated into the curriculum.

Figure 2-1.

Web for the unit "Oceanography"

Math
Music

Social Studies
OCEANOGRAPHY
Language Arts

Art
Reading

Science

Unit Title: Oceanography
Grade Level: Seventh Grade
Strand: Science
Central Question: How does ocean life affect all life?
Selected Key Ideas:
- Ocean life has a profound influence on the lives of people.
- The food chain is dependent on the ocean.
- Weather is affected by the ocean.

Selected Concepts: Animal Life, Plant Life, Climate Cultural Patterns.

1. Thinking Logs

Thinking logs promote reflection about what students read and learn; writing is used to make corrections about prior knowledge and newly presented ideas (Beane, 1991). Thus the use of logs could be initiated as the unit is introduced and used to incorporate all other learning activities.

- Students will summarize what they believe are the most important ideas.
- Students will give personal reactions to information, events, or characters presented.
- Students will discuss connections or present arguments about ideas presented.
- Students will write questions about what they don't understand from readings and discussion.

2. Science

- Students will identify 12 ways to save our oceans.
- Students will choose topics from daily themes to research and to present written and oral reports - the ocean floor, whales, sharks, scuba diving, photography.
- Students will participate in a lab analysis of salt water.

3. Language Arts

- Students will read, discuss, and create original stories on similar themes after reading the short story, "Three Skeleton Keys" or plays, "Mutiny on the Bounty" and "The Big Wave."
- Students will apply research concepts to the science topical report.

4. Reading

- Students will apply library research to the creation of poetry using ocean animals as a topic. Students will present their thoughts in an acrostic verse, where the letters of the subject (e.g., SHARKS) are used as the first letter of each line of the poem.

5. Music

- Students will create melodies or raps from the acrostic poetry that was written in reading class.

6. Social Studies

- Students will recognize oceanographic mineral resources, food chains, and ocean currents.
- Students will design maps of contour lines in the ocean.
- Students will draw maps of ocean currents and mineral resources.

7. Art

- Students will draw and paint different varieties of oceanographic fish. Paintings will be displayed in the glass foyer as an aquarium.

8. Math

- Students will view a filmstrip on the changing sea floor and complete a data sheet graph on the sea floor profile.
- Students will graph pictures in a co-ordinate plane.
- Students will play the "Battleship" game.

Figure 2-2 shows another example of a political science strand focusing on the theme of "Life in a Space Colony." Appendix C includes the integrated curricular activities used to develop the learning experiences.

Figure 2-2.

Web for the unit "Life in a Space Colony"

Astronomy
Psychology
Ecology
Meteorology
Political Science

SPACE COLONY

Communications
Geography
History
Physics
Sociology

Unit Title: Life in a Space Colony
Grade Level: Sixth Grade
Strand: Political Science

Central Question: How should the colony be changed?

Selected Key Ideas:

- Governments influence the lives of people.
- Political decisions are a result of the need to settle problems.
- The values of the society are implicit in the political documents and behavior of the people.

Selected Concepts: Democracy, Dictatorship, Monarchy, Oligarchy, Theocracy.

(Ganapole, 1989, pp.84-85)

Summary Statement of Literature Review

For the last two decades, middle level educators have been engaged in physical restructuring, yet curriculum reform is still uncommon. For those at the middle level who are willing to consider curriculum revision, the possibilities for interdisciplinary, integrated studies have positive implications. "These new curriculum conversations view early adolescents as real human beings who, while at this stage, are also participants in the larger world and have serious questions and concerns about both" (Beane, 1991, p.12). With the affective environment in mind, then, middle level educators must acknowledge the extraordinary powers of the pre-adolescent brain and the way it best learns. In so doing, current research is encouraging a return to Deweyan philosophy which is discussed in the contemporary progressive movement of social constructivism. The constructivist theory's point of origin is based in both fields of psychology and education. The applications of modern curricularists delineate the necessity of integrated curriculum which blends inquiry, invention, personal choice, and self-direction as young adolescents' developmental and cognitive abilities make experiential learning connections.

CHAPTER III

ANTICIPATED OUTCOMES AND EVALUATION INSTRUMENTS

The following goals and outcomes were projected for this practicum.

Goals and Expectations

The purposes of the writer's practicum project are reflected in the following statements. The major goal of the study was to verify a change in middle level teachers' mental models about teaching and learning after twelve staff development sessions in cognitively guided instructional theory. In doing so, a second goal was to enhance middle school co-teaching teams' instructional practices by incorporating cognitively guided strategies into the teaching of cross-curricular thematic units. The twelve staff development modules were presented over a six-month period, beginning in November, 1993, and concluding by the end of April, 1994.

One objective of the project was to increase the number of interdisciplinary units taught by each co-teaching team. Another focus was to challenge educators to curtail the practice of passive learning and organize learning, instead, around the daily needs and experiences of young adolescents. Most importantly, teachers were to become knowledgeable about brain-based learning theory and how to include such cognitive strategies into integrated curriculum. Finally, a fourth objective was to improve teacher attitudes about teaching and learning.

Expected Outcomes

1. When administering a post-survey on curriculum integration, 100% of the

instructional co-teaching teams involved in the study were to complete the task. The post-surveys were completed in written form at the conclusion of the final inservice session. Appendix B provides a copy of the survey which was utilized as both the pre- and post-survey.

2. The co-teaching teams were to increase the number of cross-curricular thematic units they taught from three to six. This was to be accomplished through collaborative study among staff so ownership in programming could be developed (Toepfer, 1992).

3. Four of the six interdisciplinary units were to be organized around student interests and input. Four of the six units were to also utilize meaningful or experiential learning based on "relaxed alertness and immersion" (Caine & Caine, 1990). Cooperative learning strategies and community-based instruction maximized the interactive elements of middle level curriculum.

4. Four of the interdisciplinary units taught by each co-teaching team was to incorporate a cognitively guided instructional strategy from the research on brain-based learning theory (Jones, Palincsar, Ogle, & Carr, 1987). On the post-survey, the section titled "teacher knowledge base of learning theories," was used to confirm teachers' understanding and use of cognitive strategies while teaching integrated curriculum.

5. On the post-survey, results from the "administration," "student academic values," "student behavior values," and "teacher-student relationship" sections were used to verify improved teacher attitudes and students' satisfaction.

6. Expressive comments on the post-survey were to reveal less dichotomous attitudes about cognitive instructional strategies and collaborative thematic teaching than was shown on the pre-survey.

7. Another key informant interview with the principal was to indicate that instructional staff had knowledge of and utilized cognitively guided strategies during four thematic units of instruction. He also verified that co-teaching

teams were incorporating interactive, cooperative elements into lessons so learning is more meaningful and experiential for young adolescents (Johnson & Johnson, 1989; McCarthy, 1987).

8. Interviews with teachers cited their use of cognitive strategies during their teaching of cross-curricular thematic units. Co-teaching teams were to describe and model at least one cognitive strategy during each of four units of thematic instruction.

9. Students used the cognitive strategies taught in the class(es) where they were introduced and applied them to new learning tasks, the process known as transfer of learning. Randomly selected students were asked to keep "thinking logs" to verify their ideas and reflection about cognitive instruction.

Measurement of Outcomes

A qualitative model of educational evaluation was this project's principal consideration. Concepts of Eisner's (1985) educational connoisseurship and criticism were utilized to evaluate the outcomes of this project. Because of qualitative methods, a "more meaningful picture of educational undertakings" was sought as opposed to the more quantitative, scientific approaches to evaluation. "Connoisseurship is the perceptive appreciation of complex entities ... Connoisseurs, as a consequence of their background, are able to appreciate subtle qualities of phenomena with more sophistication than can other individuals (Popham, 1993, p.43). Criticism is the "art of disclosure," when the education critic describes a project's outcome in layman's terms and practical experiences.

1. Curriculum Integration Survey

All teachers involved in the project were administered a post-survey on curriculum integration. The post-surveys were completed in written form at the conclusion of the last inservice session. Pre and post test results were compared, analyzed, and interpreted to see whether or not attitudes improved as a result of teachers' understanding that cognitively guided instruction and brain-based learning theories are foundations for planning and teaching cross-curricular thematic units to pre-adolescents.

The data collected from the pre and post surveys are presented on two separate, but comparative bar graphs. (See Appendix D). Survey results on both graphs are addressed in the form of Arabic numerals, not percentages, since the number of teaching staff involved in the practicum study was under 100. Also, within the keeping of the qualitative model of educational evaluation, statistical significance is not established on the graphic representations. The two graphs subscribe merely as a visual organizer to point out the differences in middle level co-teaching teams' thoughts and attitudes before and after staff development on cognitively guided instructional strategies. The bar graphs and expressive comments are interpreted by the principal and researcher on the basis of Eisner's (1985) educational connoisseurship and criticism model in Chapter V.

2. Key Informant Interviewing

The principal, who possessed a special knowledge from the research of cognitive psychology, was interviewed so that the investigator could secure data otherwise unavailable. Eisner (1985, pp.220-221) confirms that "to develop connoisseurship one must have a desire to perceive subtleties to become a student of human behavior, to focus one's perception ... to perceive the rules through which educational life is lived." The development of educational connoisseurship requires two opportunities: "to attend to happenings of educational life in a focused, sensitive, and conscious way" and "to compare such happenings, to discuss what one sees so that perceptions can be refined, to identify events not previously perceived, and to integrate and appraise what has been seen" (Eisner, 1985, p.221). Such is the knowledge base of the middle school principal. (See Appendix E for the Key Informant Interview Guide).

The key informant interview with the middle school principal conveyed a number of expected outcomes in regard to the study. First, he indicated whether or not the co-teaching teams involved in the study increased the number of cross-curricular thematic units taught. He also divulged whether or not four of the six interdisciplinary units were organized around student input and utilized interactive elements of middle level curriculum such as cooperative learning methods and community-based sites. Thirdly, the principal verified if co-teaching teams incorporated a cognitive strategy into at least four of the interdisciplinary units they taught. The key informant interview is analyzed and interpreted again by the principal himself and the researcher in connoisseurship fashion and criticism. Results are discussed in the Chapter V report.

3. Interviewing of Subjects

The writer, after each inservice, randomly selected one or two members of each co-teaching team to interview. Teachers were asked approximately eight questions in order to gain feedback, beliefs, and practices about the presented learning theory. Each month, different group members were interviewed so that a broad spectrum of ideas was gathered by the project's conclusion. (See Appendix F for the Interview Guide for staff members). Each interview lasted approximately 30 minutes with the use of open-ended questioning techniques. With each interviewee's permission, a tape recorder was utilized to facilitate analyzation of the collected results. Interviews were ongoing throughout the study.

As a result of working directly with co-teaching instructional teams, the researcher's interviews are a description of participants' feelings, behaviors, attitudes, and applications related to the inservice training and implementation of the learned material. Middle level teachers revealed the following information about their team's instructional practices: how many cross-curricular thematic units were taught, how many interdisciplinary units incorporated cognitive strategies, and if interactive elements of middle school curriculum were used to enhance learning. These interviews are discussed and synthesized by the researcher in the report. Interview data was interpreted to help the researcher make generalizations about verbal comments of the teachers' in comparison to the principal's remarks.

4. Thinking Logs of Students

Students were randomly selected to keep a journal or thinking log. Each time a cognitive strategy was taught, they spent time individually writing their initial reactions to the strategy. As students learned and practiced different cognitive strategies, they processed in their thinking logs what opportunities they had to utilize each strategy in respective classes. Students also could, individually or in small groups, prepare a project or demonstration utilizing a specific strategy. Such progress was shown through performance-based assessment.

5. Evaluation through Interactive Participant Observation

The investigator, after each inservice on cognitively guided instruction and brain-based theory, recorded field notes to reconstruct interactions and activities observed. Direct quotes of teachers' specific comments in regard to feelings, beliefs, and values about the inservice topic were kept in an observation log. The log was also used as a mechanism for recording unexpected events during the practicum study.

The researcher conducted three teaching sessions with sixth grade students. A different cognitive strategy was taught to each group. The writer's first-hand experience of teaching cognitively guided instructional strategies should serve to enhance the descriptive outcomes of the study.

The researcher, as an interactive participant and facilitator, drew conclusions about the entire study by addressing the collection of field notes and unexpected events recorded in the observation log. Cross referencing the data taken from all surveys, all interviews, and all student "thinking logs" was a major undertaking as the investigator developed a direct and expert explanation of the research results (Leinhardt, cited in Resnick, 1989). Additionally, conclusions were drawn and recommendations made in accordance with the qualitative model of educational evaluation.

> Qualitative research brings the study of human beings as human beings to center stage ... We as human beings are more than simply the sum total of psychological measures, survey instrument responses, and bits of data on a laboratory checklist. That our experiences, fears, anxieties, emotions, beliefs, reactions, hopes, behaviors, and irrationalities are not well captured or explained by the rush to quantification is one reason that qualitative research is experiencing the renaissance it is (Bogdan & Bilkin, 1982, p.x).

CHAPTER IV

SOLUTION STRATEGY

Discussion and Evaluation of Solutions

The need, as it existed in a middle school setting, was to increase co-teaching teams' understanding of cognitively guided instructional strategies and to promote the incorporation of these strategies into the teaching of cross-curricular thematic units, thus raising pre-adolescent achievement. In so doing, a secondary requisite was to improve teachers' attitudes and students' satisfaction about teaching and learning.

The specific problem was to answer the following question: Does staff development in cognitively guided instructional theory change teachers' mental models about teaching and learning.

A review of the literature indicated the new research on learning with implications for a changing middle-level curriculum. Possible solutions gleaned from the literature propose concepts for adoption. Middle school experts suggest that middle level curriculum be organized around thematic units whose topics might be based upon young peoples' interests, concerns, and experiences (Beane, 1990, 1991, 1993; Lounsbury, 1991; Toepfer, 1992). Lounsbury (1991) further emphasizes that middle school education is based on human growth and development. By helping students see connections as topics are explored in interdisciplinary ways, they are encouraged to examine a theme from many different perspectives. Such an approach "should help each student become the best thinker she or he can be at the rate and pace that her or his capacities and developmental readiness will allow" (Council on Middle Level Education, cited in Toepfer, 1992, p.9).

Understanding a brain-based approach to learning and teaching embraces the change from memorizing information to meaningful learning (Caine & Caine, 1990). This new perspective of learning has surfaced from the research and theory in cognitive psychology. This view sees learning as a highly interactive process of constructing personal meaning from the information available in a learning situation and then integrating that information with what is already known to create new knowledge. Reid and Stone (1991) acknowledge that the characteristics, practicality, and utility of such cognitive instruction underpins the theories of constructivism and wholism. This concept relates "full circle" back to the advocacy of teaching thematic or integrated curricular units in the middle school setting.

Understanding How Cognitive Strategies Positively Affect Cross-Curricular Thematic Teaching

As a result of the literature review, the investigator generated the following ideas. The writer had been involved with integrated curriculum at the middle school level for the past two years - one year as an EEN co-teaching partner and another year as an EEN program support teacher, working to inservice staff on the rationale and models of curriculum integration. The staff survey confirmed that professionals understand the rationale underpinning curriculum integration for pre-adolescents in that it makes learning connections and helps them construct meaning by seeing the whole picture. The research states that holistic connectiveness is developmentally appropriate for the young adolescent's cognitive abilities (Lounsbury, 1992; Toepfer, 1992). On the other hand, the staff survey also verified that middle-level educators did not totally understand why brain-based learning is so effective for their students. Implementing strategic teaching through integrated curriculum helps students construct knowledge while reading and studying (Fogarty, 1991). Ogle (1989) acknowledges that as teachers continue their growth toward strategic planning in helping youngsters become active learners, resource people need to be available for support and positive and assistive feedback. Receiving encouragement from administration is significant as well, as is sharing ideas and experiences with peers.

Therefore, the writer, with the support and help of the middle school principal, developed inservice modules and provided training on cognitively guided instructional strategies, the reasoning for their underlying success, and their relationship to curriculum integration. Cognitive strategies are conditions of the holistic and social constructivist theories of learning.

The Presentation of Metaknowledge

Derry (1989) offers ideas on the significance of self-regulation, self-direction, or metacognition as a "form of problem solving that involves analyzing a learning task and devising a strategy appropriate for a particular solution" (p.4). She further distinguishes between the terms learning tactics and learning strategies in that a strategy is a complete plan for accomplishing a learning goal; whereas, a learning tactic is only one technique in the plan. Several or numerous tactics must be executed to complete a plan and accomplish a goal. Therefore, teachers must be aware of the need to instruct students in learning two distinct types of strategies. Both types of training can be incorporated into regular classroom teaching by planning consciously. Derry explains three major categories of tactics: tactics for acquiring verbal content, tactics for acquiring procedural skills such as language and reading, and tactics for support and self-motivation. By increasing middle level students' repertoires of learning tactics, they are being prepared to develop executive strategies for making decisions and solving problems during curriculum integration activities.

Elaboration Strategies

Research similar to Derry's, to help students develop strategies for effective learning, has been accomplished by Weinstein, Ridley, Dahl, and Weber (1989) who suggest that making connections - learning that takes on personal relevance - requires students to use elaboration strategies. "Elaboration involves using what we already know to help make sense out of what we are trying to learn" (p.17). Weinstein et al. have developed and conducted teacher training workshops as part of a cognitive learning strategy project at the University of Texas. Teachers are trained to develop fluency in demonstrating to students how they can ask questions of themselves. By practicing self-questioning techniques, students begin to make sense of new information based on prior knowledge.

Scaffolding Instruction

The term metacognition, thinking about one's own thinking, or self-talk, is stressed in the research on effective teaching. Rosenshine and Meister (1992) illustrate how successful teachers of cognitive strategies teach self-talk through instructional procedures called scaffolds. "Scaffolds are forms of support provided by the teacher (or another student) to help students bridge the gap between their current abilities and the intended goal. Scaffolds may be tools, such as cue cards, or techniques, such as teacher modeling" (p.26). Palincsar and Brown (cited in Rosenshine & Meister, 1992) state that scaffolds are useful within a student's "proximal" development, the area where the student cannot proceed alone, but can make connections when guided by scaffolds. Scaffolds are supposed to be temporary, gradually decreasing as the process of learning takes place.

Reciprocal Teaching

Palincsar, Ransom, and Derber (1989) define one of the most powerful cognitive strategies presented in the current literature, reciprocal teaching. With this method, students and teachers dialogue about a topic, taking turns leading a discussion. The goal, for the students, is to construct better meaning from the text or content being discussed, in other words, to increase comprehension. In a study conducted by Palincsar and Brown (cited in Palincsar et al., 1989), 20 consecutive teaching days of reciprocal instruction was enough for over 90 per cent of a group of experimental students who demonstrated statistically significant gains on standardized measures of comprehension. They also had to demonstrate long-term gains on criterion - referenced comprehension tests as well as tests administered in content area classes.

In reciprocal teaching, the teacher and students take joint responsibility when participating in discussions; however, the teacher initially assumes a major role in modeling expectations to the students. Gradually, the teacher releases control of the dialogue to the class. Palincsar, David, Winn and Stevens (1991) suggest that the teacher help each student participate in the discussion through consistent use of positive and corrective feedback and demonstrations.

Collaborative Problem Solving

Palincsar et al. (1991) also discuss a procedure called collaborative problem solving as a strategy useful to understanding written text. In this condition, the students are more involved from the onset because they identify the strategies they think would be helpful in monitoring their understanding of text. With the implementation of this complex cognitive technique, students also "evaluate the effectiveness of the strategies as well as the criteria for determining their success in using the identified strategies" (p.48). This procedure begins with several days of opportunities for the students to work cooperatively in order to promote group collaboration before the teacher introduces the group problem solving condition. Next, the concept of reading as problem solving is described as students are encouraged to "identify the kinds of problems they might encounter as they read text and how they might solve these problems" (p.48). The results of Palincsar's et al. (1991) study showed collaborative problem solving to be effective in heterogeneous groups; both high achieving and low achieving students attained criterion performance.

The context of cognitively guided instruction, then, plays a significant role when teachers plan thematic units, teach integrated curricular lessons, and share and reflect on their experiences. The goal of strategy instruction through curriculum integration is literacy. To facilitate thinking and reasoning as pre-adolescents engage in intentional self-regulated learning or metaknowledge is the ultimate mechanism to effect scholarly, flexible individuals for the changing societal and career demands of the 21st century.

Description of Selected Solution

Steps were taken to implement a practicum in which middle school co-teaching teams would increase their understanding of cognitive instruction and incorporate cognitively guided strategies into the teaching of cross-curricular thematic units. Each of twelve inservice modules was approximately 90 minutes in length. Co-teaching teams were inserviced, for the most part, in large-group sessions; however, four small-group inservices were included as well.

The researcher had studied and implemented numerous cognitive strategies using the direct instruction approach as well as cooperative learning and other interactive approaches. Although direct instruction can work well for at-risk students (Deshler & Schumaker, 1986), Jones, Palincsar, Ogle, and Carr (1987) indicate that alternative models of cognitive strategy instruction are more effective for all students. Cognitively guided strategies for use with heterogeneous groups have been thoroughly researched.

The inservice modules on cognitive instruction were designed and presented in accordance with effective elements of lesson design (Hunter, 1986). Staff development participants were presented the objectives of each inservice module. The researcher provided the anticipatory set, input, modeling, and checking for understanding. She also facilitated guided and independent practice with feedback. Closure to each module was emphasized; connectiveness between presented cognitive strategies and their relationship to integrated curriculum was also confirmed.

Direct explanation or development of an expert description was an element of each module. The researcher needed to understand the subject-matter knowledge as well as participatory-learning knowledge. "By building on these two knowledge bases, a successful teacher can explain new material in a way that enhances knowledge acquisition", as well as which concepts and procedures of a topic are difficult to grasp (Leinhardt, cited in Resnick, 1989, p.67).

According to Leinhardt, an instructional explanation should contain six features:

1. Goal identification.
2. Guides to monitor progress toward the goal.
3. Examples of the case.
4. Parallel demonstrations, linkage of demonstrations.
5. Legitimization of the new concepts and procedures.
6. Linkage of new concepts to old.

Leinhardt (1989) illustrates the effectiveness of expert descriptions in a study conducted with a group of second-grade children. A series of expert mathematical lessons on subtraction with regrouping was administered in approximately seven hours of instruction. "Students at all ability levels had gone from not knowing or understanding subtraction with regrouping to high levels of performance in computational skill" (p.115). Expert descriptions achieve similar results in adult learners (Joyce, Showers, & Rolheiser-Bennett, 1987).

Learning from examples through guided cooperative learning was also a component of each inservice module. Cooperative settings, according to Johnson and Johnson (1989), result in significant improvement in achievement. Explanations, discussion, and social interaction develop logic and are positively correlated with establishing learning connections (Brown & Palincsar, cited in Resnick, 1989). Glasser (1986) maintains that students and adults comprehend and remember 95% of what they teach to others.

Apprenticeship learning was described and discussed during the inservice modules which presented specific cognitive strategies. Brown and Palincsar (cited in Resnick, 1989) affirm the concept of temporary prompts or scaffolding as a way to model cognitive apprenticeship. Students or adult learners "emulate the teacher by retelling content in their own words, by asking what something means, and by posing questions about main points" (p.417). Apprenticeship learning is so successful because it embodies cooperative learning through the practice of reciprocal teaching and direct instruction where the teacher or trainer attempts to provide temporary scaffolds to bolster learning connections.

Lastly, during the twelfth inservice module, conclusions were drawn concerning the impact cognitive instruction has on pre-adolescent learning through teaching cross-curricular thematic units. Caine and Caine (1991) note that the brain comes equipped with the ability to self-correct, learn from experience, self-reflect, and create. Brain-based learning stresses the fact that literature, math, history and science relate to each other and

> share common information that the brain can recognize and organize. This is at the heart of thematic teaching. Because the learner is constantly searching for connections on many levels, educators need to orchestrate the experiences from which learners extract understanding ... The changes in education need to be substantial, and teaching to the brain will therefore require most teachers to make a major perceptual shift (p.5).

Report of Action Taken

The researcher's practicum was implemented through the presentation of twelve inservice modules over a six-month period. Each module was not presented in twelve consecutive weeks for several reasons: First, the nature and complexity for understanding principles of cognitive instruction requires processing and practice by teaching colleagues. Secondly, when staff development occurs at an accelerated pace, the chances for staff follow-through is lessened (Joyce, Showers, & Rolheiser-Bennett, 1987). Therefore, the researcher's practicum was implemented at consistent intervals beginning in late November, 1993, and concluding by the end of April, 1994.

Any reader of this project wishing to duplicate the solution strategies or staff development modules presented in this final section of Chapter IV should feel confident to do so.

Description of Inservice Modules

Outlined below is a description of each inservice module presented to the middle level teachers who were involved in the project. This staff development was offered as a class titled "Beyond Effective Teaching." Twenty general and special educators at Franklin Middle School (Grades 6-8) chose to participate in the class.

Module 1 - Paradigm Shifts

The concept of what a paradigm shift in education entails was introduced by the researcher through a T-chart with audience participation. Teachers were asked to describe Japan's economy in 1950 and again in the time period from 1980-1993. Contrasts were discussed and analyzed with a final conclusion agreed upon: In 1950, the Japanese economy produced cheap plastic and non-durable goods, but throughout the 1980's, Japan became recognized as a competitive, global economy who, through work ethics and cooperation, began manufacturing quality, high-tech, and durable products. Teachers also agreed that a paradigm is a model or process by which educational change should take place through a shift in attitude, philosophy, priorities and new ideas. Appendix G illustrates ideas teachers presented for the T-chart.

The video titled "The New American Revolution in Learning" was next presented with guided questions to emphasize key concepts about how to teach students to "originally" think. The use of multiple intelligence and social constructivism defined as hands-on, active and cooperative learning were focal points of the video, challenging educators to change their teaching roles and to embrace new approaches to learning. Appendix G also provides a list of the discussion questions used for interacting about the video's framework for educational reform.

Small groups then decided upon three position statements about how education should change in their classrooms for the 21st century. Whole group sharing and processing concluded the inservice on paradigm shifts which the writer and principal at Franklin facilitated. Teachers felt they should begin with the premise that all children can learn. They also stated that an educational paradigm shift would include a collaborative, process-oriented curriculum, inquiry and real life skills, active learning to acknowledge all intelligence, teachers as facilitator, performances and demonstrations, and parent involvement. (See Appendix G for elaboration of position statements).

Unexpected Events

A discretionary grant for $6,100 was written by the researcher and approved by the state's Wisconsin Department of Public Instruction. The project title, Design, Implementation, and Evaluation of Inservice Programs on Cognitively Guided Learning Theories was a spin-off of the writer's practicum project. As a result, Professor Richard Lehrer, UW-Madison, was invited by the researcher and principal to participate in the project as "expert in residence." Dr. Lehrer, like the principal of Franklin Middle School, possessed a connoisseurship from the research in cognitive psychology and was in a position to troubleshoot implementation questions on cognitive theory and strategies.

Secondly, Dr. Lehrer's participation in the grant project caused slight changes in the original content and presentation of the twelve inservice modules. Professor Lehrer provided a process through which cognitively guided instructional strategies can be modeled for and practiced by students to improve their learning. This research and communication process served to enhance the staff development on cognitive strategies.

Module 2 - Brain-Compatible Learning

The purpose of this presentation focused on the definition of brain-based learning theory and the fact that teaching students how to "originally" think produces deeper, broader learning. Students in the role as designers of knowledge was a key concept presented as a paradigm shift to enhance teaching and improve student learning. Richard Lehrer, professor in the Department of Educational Psychology at the University of Wisconsin in Madison, verified a theory and process for restructuring the curriculum. Dr. Lehrer explained the use of research and communication skills in his model (See Appendix H); the writer and principal facilitated whole group discussion. Hart (1989) discloses that teachers have never had a theory from which to work. Dr. Lehrer's model reinforced Hart's belief that brain-compatible education is an inherent social process in which we guide students to extend and conceptualize current understandings by participating in joint, collaborative activities. Vygotsky (1978) confirmed these ideas through his notion of the zone of proximal development (ZPD). The ZPD can be defined as the "distance" between what students can learn on their own and what they can learn with the help of a more knowledgeable mentor or facilitator. Such intrapersonal and interpersonal techniques "deepen and broaden" learning.

Module 3 - Metacognition

Teachers met in small groups to process Dr. Lehrer's information and to engage in a description and synthesis of metaknowledge. The writer and principal facilitated the small-group discussions.

Jerome Bruner's (1977) process of education and Jean Piaget's (cited in Schickedanz, Schickedanz, Hansen & Forsyth, 1993) cognitive developmental theory guided the small group processing that true learning involves "figuring out how to use what you already know in order to go beyond what you already think" (p.183). Students becoming problem-solvers and learning HOW to learn AS they learn was the basis for understanding metacognitive teaching and learning in this staff development module. The term, metaknowledge, was presented to illustrate to staff how cognitively guided strategies can be described, modeled and practiced. Caine and Caine's (1990) model for teaching cognitive strategies was shared with the group.

During these informal discussions, teachers expressed concern that Dr. Lehrer introduced a demanding theoretical model, limiting them to satisfactorily cover their predetermined curriculum. Changing sequence of curriculum along with compacting objectives and integrating themes were posed as solutions to help facilitate this paradigm shift where students become designers of knowledge. Ganapole's (1989) nontraditional curricular and organizational model, presented in the literature review of Chapter II, was also discussed as a possible framework to help guide teachers. Since higher level thinking skills are integrated with content in Ganapole's plan, these eight steps were compared to Dr. Lehrer's model of communication and research skills. (See pp.23-27 in Chapter II and Appendix C for detailed information on Ganapole's work).

Module 4 - Students as Designers of Knowledge

Dr. Lehrer returned for another session to further present and explore his theory of students as designers of their own knowledge in contrast to teachers "filling empty vessels (their students' minds) with knowledge." He also attempted to troubleshoot issues that teachers were encountering while implementing the theory into their respective classes. The writer and principal facilitated this inservice module.

Several teachers involved in the project explained their implementation of Dr. Lehrer's process with their sixth grade social studies classes. One teacher videotaped her students' small group presentations, and this tape was viewed and discussed by the "Beyond Effective Teaching" class and interpreted by Dr. Lehrer, the writer, and the principal. The paradigm shift in curriculum planning and implementation was the focus of the discussion. When students are designers of knowledge, teachers become facilitators; this appeared to be a "strange" feeling and experience for the teacher who videotaped her students' collaborative efforts.

Dr. Lehrer addressed teachers' concerns during this session as well. They questioned Dr. Lehrer as to background history, rationale, and objectives of his model for instruction. He reviewed the use of student interests and input, collaborative study, and higher level thinking skills as well as student development of hypermedia presentations. The researcher and principal reinforced how the communication skills of asking appropriate questions, planning projects, researching, organizing and analyzing information are the students' use of metacognitive thinking. Student presentations, reflections, and revisions viewed on the video illustrated the use of cognitive/metacognitive strategies as well. The writer reminded the teachers, once again, how Dr. Lehrer's model is similar to Ganapole's. Handouts of Ganapole's eight-step framework were distributed and compared to Dr. Lehrer's research and communication model.

Teachers also questioned how to assess student progress using Dr. Lehrer's model. A discussion of authentic and performance-based assessment followed. The definition of "rubrics" and performance "indicators" was pursued with the conclusion that indicators for grading need to be specific.

Considerations for informing parents about this new style of instruction were clarified. The writer referred to the discretionary grant and how monies were set aside to pay several parent groups for their time and effort in becoming knowledgeable about cognitively guided strategies. The district's special education Parent Advisory Committee and Franklin Middle School's Parent-Teacher Organization (PTO) board were the two groups provided with overview presentations of paradigm shift in teaching and learning. Dr. Lehrer explained how parents could be invited to see their child's group presentations as well as be invited to participate in student-led conferences.

Finally, teachers expressed the need for support from fellow colleagues in implementing this approach. One co-teaching team in full opted to become involved in "Beyond Effective Teaching." This group of five teachers explained how entire team involvement in the class provided them with a common foundation of ideas they could utilize during block-time planning. Quality time for curriculum planning was still a crucial need.

Module 5 - Elaboration and Scaffolding

Two articles on elaboration and the use of scaffolds for teaching higher-level cognitive strategies were given to staff members for preparatory reading for this inservice session (Weinstein, Ridley, Dahl, & Weber, 1988/89; Rosenshine &

Meister, 1992). The staff development session focused on the demonstration of how to cue thinking through the use of theory-embedded tools. How to teach metacognitive thinking was revisited, and the role of dialogue in providing elaborative and scaffolded instruction was explored (Jones, Palinscar, Ogle, & Carr, 1987). The writer presented the metacognitive techniques and facilitated the ensuing discussion.

As an introductory activity, teachers were asked to list tools they currently used to cue metacognitive thinking into their daily instruction. Responses varied from the use of brainstorming, visualization, comparison, and association techniques to the naming of specific strategies such as think-pair-share and know-want to know-learned (KWL).

The writer next demonstrated a paraphrasing strategy which is taught through describing, modeling, verbally rehearsing, and practicing a mnemonic device (Deshler & Schumaker, 1986). Direct metacognitive explanation, cognitive coaching, elaboration, and scaffolding were defined, then modeled as to how and where these tools were embedded within the paraphrasing strategy called RAP.

Conclusions were drawn through the debriefing at the end of the session. Although no staff member had previously been introduced to the RAP strategy, most felt validated in utilizing similar instructional techniques. Teachers were assured that being consciously aware of their use of metacognitive strategies results in more effective teaching and learning (Hunter, 1986). Appendix I provides the resource handouts used for this inservice session.

Module 6 - Reciprocal Teaching

Another article on the development of reciprocal teaching was distributed to staff members for reading prior to this staff development session. The writer and principal presented four dialogue strategies designed as procedures for reciprocal teaching through the technique of direct explanation. Reciprocal teaching was first defined as students and teachers talking to one another about the meaning of text, taking turns in leading the dialogue. The four strategies incorporated into reciprocity were question generation about the content, summarization of the content, point clarification, and prediction of upcoming content (Palinscar, Ransom, & Derber, 1989).

One seventh grade language arts teacher was familiar with and had practiced the reciprocal teaching strategy several times. She had presented the main content of numerous novels to her seventh graders through a series of book talks. The students then formed small groups based on a novel of piqued interest. All small group members immersed themselves in planning and designing a presentation that would creatively depict the characters and storyline of their specific novel.

During this staff development session, the principal engaged the language arts teacher in a dialogue to illustrate to class members how the four strategies of reciprocity were modeled for students as they were designing their topics for presentation to their peer audience. At the end of this inservice session, teachers concluded that reciprocal teaching was an underpinning to Dr. Lehrer's model. Several people mentioned how practical and "down to earth" this session was. (See Appendix J for a reciprocal teaching plan).

Module 7 - Guided Cooperative Teaching

Reciprocal teaching can take place in a "cooperative learning group that features guided practice in applying simple concrete strategies to the task of text comprehension" (Brown & Palinscar, cited in Resnick, 1989, p.413). This inservice session began with a review of the definition and four components of reciprocal teaching. Teachers were asked to share teaching examples from recent lessons where they had made students cognitively aware of their use of question generation, clarification, summarization, and prediction in order to help them comprehend text. A learning disability teacher shared a project that took her language arts class of six LD students nine weeks to accomplish. The writing unit's finished product was a student-created computer game using Hypercard and other computer skills. The LD teacher explained how the four components of reciprocal teaching were described, modeled, and practiced throughout various stages of the creative writing project. This activity will be more thoroughly described in Chapter V.

Secondly, the components of reciprocal teaching were modeled and practiced by the researcher, Franklin's principal and reading/writing specialist. Appendix K shows the text of two paragraphs, one about pit vipers, the other on youth violence, that were utilized during this demonstration. Audience participation was also encouraged during this interactive segment.

The next portion of the session was devoted to the direct explanation of how elaboration and scaffolding techniques are used within reciprocal teaching and how reciprocal teaching is used within guided cooperative learning, particularly the "jigsaw" strategy. Inservice participants were asked to form three groups of four people and pretend they had worked together for three weeks to present a novel of choice through guided and cooperative reciprocal teaching. Each home group then numbered off by 4's and "jigsawed" to an expert group. There were now four groups of three people. Each expert group was assigned one of the four components of reciprocal teaching and was asked to create and discuss a technique that could be used to model the specific component of reciprocal teaching. Each person in the expert group was asked to know how their created strategy could be taught so s/he could explain it back in the home group. When expert groups returned to their home groups, four different strategies were shared, one by each member who explained a different technique to model summarizing, clarifying, predicting, and generating questions. Debriefing the jigsaw activity ended this staff development module which was facilitated by the researcher.

Module 8 - Collaborative Problem-Solving

The goals of collaborative problem solving are twofold: to have students identify the strategy(ies) they think would be useful with a particular assignment; to have students evaluate the effectiveness of the strategies they used (Palincsar, David, Winn, & Stevens, 1991). This staff development session began with a review of approaches that incorporate metacognition into instruction. Teachers were reminded of the necessity of describing and modeling metacognitive techniques. Next, participants discussed the cognitive strategies introduced through "Beyond Effective Teaching." The re-generation of techniques such as clarifying, asking, elaborating, paraphrasing, summarizing, predicting, visualizing, comparing, associating, brainstorming, and scaffolding were mentioned. This review was important since collaborative problem solving can incorporate all cognitive strategies.

This session ended with a discussion of the procedures to promote collaborative problem solving. Jones, Palincsar, Ogle, and Carr (1987) address three procedures to teach this technique:

1. Provide opportunities for students to work collaboratively to establish trust and camaraderie. The activities should be "affective" in nature.
2. Provide easy academic tasks, and encourage small groups to discuss reasonable solutions.
3. Introduce the concept of reading as problem solving; ask students to identify the kinds of problems they might encounter as they read text. Then the question, "How might you solve these problems?", be asked.

The writer facilitated the discussion of this staff development session.

Module 9 - Implementation of Collaborative Problem-Solving

Putting collaborative problem-solving to work is not an easy task. For middle-level students to discuss and evaluate the strategies they used to complete an assignment takes time and patience on the teacher's part. Consistent describing, modeling, and coaching in a controlled setting is required. Consistent positive and corrective feedback to students is also required (Deshler & Schumaker, 1986).

This staff development session began with participants working in small groups to create an imaginary animal, the PULGAR. Small groups were given large sheets of drawing paper and magic markers. Directions for the assignment were that "nobody talks, and everyone must contribute to the drawing." When the activity concluded, teachers were asked to describe their "pulgar's" features, habitat, and defense mechanisms. More significantly, teachers were asked to process their thoughts during their active involvement: How did you come to agreement as what the "pulgar" should look like when there was the rule of "no talking"? What cognitive strategies did your group utilize?

During Activity #2, participants were asked to complete a cloze task. They were given a short article from Educational Leadership, "The BIG Accommodation Program, a Tool for Teaching Diverse Learners." (See Appendix L). Teachers were asked to suggest possible solutions to the missing segments of text. Again, after working in small groups to complete the assignment, processing and sharing of information took place: How was working as a group helpful? What was the role of individual contributions? What cognitive strategies were used to complete the cloze activity?

In the final activity, teachers were asked to analyze the strategy approaches that two girls used to study for a chapter test in science. (See Appendix L). Teachers labeled the cognitive strategies used by each student, evaluated the pros and cons of both strategies through discussion, and decided how all three activities could be applied in their own classrooms.

The writer led the activities and facilitated discussion of this inservice module.

Unexpected Events

Middle level curriculum restructuring can also be understood from the viewpoint of multiple intelligences. Gardner (1985), who researched the human brain from various perspectives, claims that individuals do not use their brains to the fullest potential. In fact, he states that human beings utilize their brain power from one to ten per cent only. Gardner further discloses that intelligence is continually flexible and growing throughout our lives, that intelligence can be taught, that intelligence is a multi-dimensional phenomena, and that human beings are smart in seven different ways, probably many more. Given this theory, the seven ways of knowing can be incorporated into curriculum restructuring at the middle school level.

Monies from the Department of Public Instruction's discretionary grant enabled the principal and researcher to attend a two-day seminar on "Teaching for Multiple Intelligences." Presented by David Lazear (1991), the workshop involved active participation to "arouse and direct peoples' full arsenal of intelligences. Lazear's work in awakening, amplifying, teaching, and transferring intelligences is original ... this theory can enter the classroom, and, more broadly, the education of all individuals in a more complete way" (pp.v & vi).

Grant monies also provided funding for the awareness sessions on cognitive instructional techniques for parents and paraprofessionals.

Module 10 - Understanding the Theory of Multiple Intelligences

This inservice session began with an introduction about how the seven intelligences were discovered by Howard Gardner and how this theory was expanded by David Lazear who used it to help him understand his cross-cultural experiences. The principal and writer facilitated this session.

Everyone engaged in a "self-report card" activity to learn about self, others, and multiple intelligences; then inservice participants were asked to share the results of their report card with as many people as possible for a ten-minute period of time. Information on the report card included a statement about each of the intelligences. (See Appendix M for the report card questions and a chart of the seven multiple intelligences). A follow-up discussion centered on awakening, teaching, and expanding intelligences.

Next, inservice participants were asked to divide into small groups for the purpose of teaching each other about the numerous intelligences based on an overview presented in a handout. The assignment for each group was to decide together who would read about a specific intelligence and then verbally share that information with their small-group partners. The sharing activity was to include two topics: the meaning of each intelligence and how to awaken or activate that intelligence. Bruner's (1977) concept of self-discovery was utilized by each small group. The staff development session ended with a discussion and debriefing of each of the intelligences: verbal/linguistic, logical/mathematical, visual/spatial, body/kinesthetic, musical/rhythmic, interpersonal, and intrapersonal. The multiple intelligences overview is found in Appendix M. The question of how cognitively guided instructional strategies can be incorporated into teaching intelligences was raised by the writer and presented as "food for thought" for the next inservice module. The interactive nature of this staff development session illustrated positive feeling tone among inservice participants.

Module 11 - Awakening and Practicing Multiple Intelligences

One week later, a session on practicing each intelligence was presented by the principal and researcher. An elaboration of each intelligence began the inservice session.

Inservice participants were again asked to form small groups for the purpose of pursuing an interactive activity on left brain/right brain. Staff members were then asked to read "Notes on Left Brain/Right Brain" in their small groups (See Appendix N), then perform a number of tasks: Make a Venn diagram to express in words what the article stated; draw a picture of the Venn; think of and act out a skit to embody the words of the Venn; and make up a song or RAP to illustrate left brain/right brain. Each group member was assigned a cooperative role to facilitate individual accountability for this 30-minute activity. Group activity was informal and flexible. As each group finished their assignment, small-group presentations were shared with the whole group. Again, the interaction of group members, awakening each intelligence, showed the activity to be motivating and intrapersonal. An individual personal reflection on the activity was used for debriefing: "What did you learn from being involved in this activity, and what questions do you have at this point?" Teachers' reflections and reactions were discussed. (See Appendix N).

The culminating activity was posed as a challenge to each small group. Teachers were asked to think of and write three position statements that would reflect their "Different Kind of Classroom." How they would describe and model cognitively guided strategies in this restructured curriculum was also to be integrated in this assignment as well as being able to explain the paradigm shift taking place. Discussion about how curriculum planning and teaching should proceed at Franklin Middle School concluded this staff development session.

Module 12 - Evaluation: Cognitive Instruction Related to Curriculum Integration

In this final module, inservice participants answered the following questions (Winton, 1988). What effect has (or should) the practice of incorporating cognitively guided strategies had (have) on the teaching of cross-curricular thematic units? In turn, what effect has this type of interdisciplinary teaming had on student behavior, self-concept, and achievement? To what extent has curriculum integration and the understanding and use of brain-based theories contributed to positive school climate? To what extent are teachers involved in team-teaching? How are teams functioning in this school? After being involved in inservicing on cognitive instruction, what do teachers perceive as advantages and disadvantages? What changes should be made? What are the perceptions of parents? What are the students' perceptions? After this facilitated interaction, inservice participants completed the post-survey on curriculum integration and school climate. (See Appendix B).

To help facilitate the evaluation component of "Beyond Effective Teaching," the principal invited an expert from the field, Jeff Wilhelm, from the nearby School District of Beaver Dam, to be a guest speaker. Since Mr. Wilhelm teaches middle-level students and uses Dr. Lehrer's research and communication process, it seemed appropriate to conclude the implementation of this project with a "live" representation of cognitively guided instructional strategies. Mr. Wilhelm presented and explained video segments of student-designed learning. He showed and discussed how students became teachers through such techniques as symbolic story expression, story drama, newscasts about stories, video documentary and hypermedia projects. Students were assessed through the presentation of their projects.

Teachers clearly need time for reflection, planning, and teaching together in order to tailor instruction that is compatible to the developmentally appropriate needs of young adolescents. Ogle (1989) claims that strategic instruction cannot be packaged. Specific cognitive strategies and the scaffolding of instruction - moving from the description and modeling to guided practice to independent and self-regulated use of executive strategies - takes systematic planning and tenacious work.

CHAPTER V

PROJECT OUTCOMES AND INTERPRETATIONS

Problem Description and Solution Strategy

The researcher's goal was to increase middle school co-teaching teams' understanding of cognitively guided instructional strategies and to promote the incorporation of these strategies into the teaching of cross-curricular thematic units. In so doing, a secondary requisite was to improve teachers' attitudes and students' satisfaction about teaching and learning.

The writer, with the support and help of Franklin Middle School's principal, designed twelve inservice modules and provided staff development on cognitively guided instructional strategies, the reasoning for their underlying success, and their relationship to curriculum integration. Cognitive strategies underpin the learning theories of social constructivism and wholism; consequently, a brain-based approach to learning and teaching emphasizes meaningful information (Caine & Caine, 1990). Thus, when curriculum is constructed around young peoples' interests and concerns, they can see connections as topics are explored in interdisciplinary ways (Beane, 1993).

Results

Outcome #1

When administering a post-survey on curriculum integration, 100% of the instructional co-teaching teams involved in the study were to complete the task. The post-surveys were completed in written form at the conclusion of the final inservice session.

Twenty-three staff members voluntarily enrolled in "Beyond Effective Teaching." Twenty teachers followed through and participated in the staff development modules. Twelve of the twenty teachers were consistently involved; however, nineteen of the twenty participants completed the post-survey, so 95% of the teachers involved in "Beyond Effective Teaching" completed the task. One special education teacher resigned her position and made a family move in February, 1994.

Outcome #2

Co-teaching teams were to increase the number of cross-curricular thematic units they taught from three to eight. This was to be accomplished through collaborative study among teams so ownership in programming was developed (Toepfer, 1992).

Franklin Middle School is comprised of six instructional co-teaching teams, two at each level for grades six, seven, and eight. Five of the instructional teams were represented in "Beyond Effective Teaching." Both sixth grade teams taught eight cross-curricular thematic units. The two seventh grade teams participating in the staff development sessions also completed eight integrated units, as did the one eighth grade team. Being a building improvement goal, all teams were committed to increase interdisciplinary teaching. Titles of each team's integrated units are listed in Appendix O. Several units at each grade level counted as double units because of the tremendous amount of co-planning involvement across curriculum areas.

Outcome #3

Four of the eight interdisciplinary units were to be organized around student interests and input. Four of the eight units were to also utilize meaningful or experiential learning based on "relaxed alertness and immersion" (Caine & Caine, 1990). Cooperative learning strategies and community-based instruction were to maximize the interactiveness of middle level curriculum.

All five teams involved in the study confessed that no interdisciplinary units taught were organized around student input; all units at all grade levels were teacher-driven. However, all five teams reported the use of cooperative learning strategies, hands-on activities, and community-based instruction to teach and interconnect real-life situations. The seventh grade teams, especially, seemed to utilize the community as a classroom. They made numerous trips to the local General Motors plant during the Jason Project unit. Since General Motors funded the "live" underwater research project, students viewed the current studies being conducted at the GM factory. The seventh grade teams' oceanography unit culminated in a field trip to the famous Shedd Aquarium in Chicago.

The principal's key informant interview confirms that interdisciplinary units taught during the 1993-94 academic school year were not organized around student input; however, this is a major goal for next year at Franklin Middle School. The principal felt that teachers were working at an outstanding pace to develop and refine the number of interdisciplinary themes that Beane's model of student interests and concerns could best be incorporated into the building improvement plan at a later date.

Outcome #4

Four of the interdisciplinary units taught by each co-teaching team were to incorporate a cognitively guided instructional strategy from the research on brain-based learning theory (Jones, Palinscar, Ogle, & Carr, 1987). The section on the post-survey titled "teacher knowledge base of learning theories" was used to confirm teachers' understanding and uses of cognitive strategies while teaching integrated curriculum.

Mrs. A., a sixth grade team leader and a strong proponent of cognitive instruction stresses, "I think we need to continue to help teachers become better at their profession. We need to look at our craft in context with current research and become lifetime learners."

Mrs. P., a seventh grade language arts teacher and a consistent member of

"Beyond Effective Teaching" notes, "We all have an introduction to cognitive instruction, but not all are knowledgeable. I used cognitive strategies throughout journal writing which did incorporate questions from four interdisciplinary units."

A special education teacher who was not a consistent member of the staff development sessions cautions, "Time is a factor when teaching cognitively guided strategies; don't push it down peoples' throats." Another special educator who could not always attend the inservice sessions declares, "Cognitively guided instruction is great! I am interested (in learning more)!"

Outcome #4 was not consistently met. Questions 17-24 on the Curriculum Integration Survey addressed teacher knowledge base of learning theories. Post-survey results present improved ratings concerning knowledge about scaffolding, reciprocal teaching, guided cooperative learning and collaborative problem solving techniques. Post survey results also reveal that teachers have increased their learning about social constructivism's strategies which connect the known to new learning. Teachers felt that they were ready to explore Bernice McCarthy's 4-MAT training which teaches educators how to incorporate brain-based learning activities into interdisciplinary planning.

The 19 teachers, after being involved in staff development on cognitive instruction, felt that other faculty members and teaching colleagues could improve their knowledge about the interrelationship of cognitive instruction with integrated curriculum. They were not sure, though, how many colleagues would be interested in staff development on cognitively guided instructional strategies or if they would be interested in relating these activities to interdisciplinary teaching.

Outcome #5

On the post-survey, results from the "administration," "student academic values," "student behavior values," and "teacher-student relationship" sections were used to verify improved teacher attitudes and students' satisfaction.

Questions 1-16 on the Curriculum Integration Survey addressed teacher attitudes and students' satisfaction. Eleven of the 16 questions showed improvement in these areas from the pre-to post-survey. Three outcomes remained the same, and two items measured appeared more negative.

Outcomes that remained the same were attitudes toward administrative involvement in curricular integration. Teachers feel that the building administrators are consistent in talking with teachers about integrated curriculum, set high standards and good examples for teachers and students, and listen to ideas from teachers and students about curricular themes. Educators also felt that administrators have made parents more aware this year of rationale for planning integrated curriculum.

On the post-survey, ratings indicate that students definitely are interested in hands-on, small group, and fun projects while learning and working on assignments. However, teachers feel that students work with the same degree of effort on interdisciplinary as well as more traditional curriculum. Does this have to do with the fact that students are "conditioned" or "programmed" to do as their teachers say?

Post-survey ratings also show that student behavior during classtime has improved, that more students enjoy learning and like their teachers, also that more teachers enjoy their work and like their students. The post-survey indicates that less students work hard when teachers do not interact with them, implying, perhaps, that teachers are slowly making the paradigm shift away from passive toward active and collaborative teaching strategies. Post-survey results also show that teachers feel they treat students as individuals and use more praise than they did one year ago.

Interestingly enough, post-survey results proclaimed that students, this year, are interested in learning from lecture methods and taking notes. On the opposite side, survey results also indicated that students enjoy learning through hands-on projects. Many students like school no matter what methods teachers utilize. Evidence is provided in the seventh grade language arts journals. (See Appendix S).

Lastly, teachers feel, this year, that less professionals teach to the various learning styles of their students. Hopefully, the educators involved in "Beyond Effective Teaching" are seeing different and enhanced ways of planning for diverse learning styles.

Outcome #6

Expressive comments on the post-survey were to reveal less dichotomous attitudes about cognitive instructional strategies and collaborative thematic teaching than was shown on the pre-survey.

Less comments were made on the post-surveys than on the pre-surveys. Out of 32 pre-surveys that were returned, 21 specified that Franklin Middle School teachers were split in the techniques of curriculum delivery. One person remarked, "Teacher attitudes and practices are dramatically diverse." Out of 19 post-surveys that were returned, only four confirmed comments on dichotomous attitudes about teaching and learning.

Professionals involved in "Beyond Effective Teaching" disclose that lifelong learning is significant for the 21st century. "Memorable learning is dramatic, surprising, unique. Memorable learning is fun, humorous, and engages emotions. It is a challenge that occurs over time. It utilizes praise and rewards through active, hands-on activities, games and contests."

Outcome #7

A key informant interview with the principal was to indicate that instructional staff have knowledge of and utilize cognitively guided strategies during four thematic units of instruction. He was to also verify that co-teaching teams incorporate interactive, cooperative elements into lessons so learning becomes more meaningful and experiential for young adolescents (Johnson & Johnson, 1989).

The principal confidently emphasized how the 19 staff members involved in "Beyond Effective Teaching" use small groups and cooperative learning in order to provide for individual learning styles. He also remarked that approximately 12-13 members of this group still do not feel comfortable with the process of change in general, nor in making a curricular paradigm shift. He noted that perhaps 1/4 of this group (4-5 teachers) have "put together" the relationship of cognitive strategies to integrated curricular teaching. He stressed that he would still like to see more students actively engaged in the learning process throughout the building. He believes his role is to provide good modeling and support for teachers so they feel encouraged to take more risks with teaching cognitive strategies within integrated units.

Outcome #8

Interviews with teachers cited their use of cognitive strategies during the teaching of integrated curricular units. Co-teaching teams were to describe and model one cognitive strategy during each of four units of thematic instruction.

Interview results differed from the post-survey results in regard to how staff members actually incorporated cognitive strategies into daily instruction. Of the 19 teachers involved in "Beyond Effective Teaching," ten gave evidence of consistently using cognitively guided instructional strategies. Nine of these staff members participated in the class with 100% attendance. One person consistently participated in the class, but could not explain how or where he incorporated cognitively guided strategies into integrated units. The remaining eight teachers stressed the significance of teaching higher order thinking skills and admitted that metacognition has an important role in students' self-regulation; yet, they were unable to describe examples of having modeled "self-talk" or "thinking out loud."

Outcome #9

Students were guided to use the cognitive strategies as they were introduced in respective classes. Students were also observed to conclude whether or not they could apply metacognitive techniques to new learning tasks. Students were asked to keep "thinking logs" to show their reflection about cognitive instruction.

A self-contained language arts class made up of seventh and eighth grade learning disabled students constructed a computer game using baseball cards as a scavenger hunt. An eighth grade student expressed in his computer journal on February 2, 1994, "Working on computers is very boring. I hate computers. 'Thay shud' have the keys in ABC order." One month later, the same journal had the following comment, "The most frustrating thing about this project is 'righting' the paragraph and thinking what to do for the game." Another feeling was also confessed, "I think writing is fun, but I don't 'writing vary' good. Writing is more fun than 'drowing.'"

A sixth grade team-taught math class, comprised of general and special education students, was engaged in cooperative problem-solving and then reflected upon their solutions. Angie reported, "We read the problem so that we could understand what needed to be solved. We thought that the last sentence of the problem would help us find the operation. We recorded the numbers that we needed. We added all of our numbers together. We got a grand total, then labeled the answer."

Ashley's explanation was more specific, "First we decided to add 4+12=16. It said that she sold 1/2 of the lemonade before lunch. So we added 16+16+32. We figured 32 was the answer, so we labeled it. We added 12+4 because she sold 4 cups after lunch, and she had 12 cups left." More examples are provided in Appendix P.

Discussion

Key Informant Interview

Near the completion of the project, a key informant interview with the middle school principal was held in order to hear his perspective about restructuring Franklin Middle School's curriculum.

Mr. E. was first asked to describe his role in increasing and enhancing the teaching of interdisciplinary units in his building. He discussed a building improvement plan that was written for the 1993-94 academic school year by a team of teachers and himself who had attended an annual middle school seminar for that purpose. The plan specified "the expectation for all instructional teams to teach eight interdisciplinary units; some teams chose to develop more comprehensive units which 'filled the bill' for two."

He further commented, "I have provided extra inservices on integrated curriculum and additional planning time. I've met with teams to discuss their progress on developing units, and teams leaders, at the Building Leadership Team meeting, share their team's involvement in integrated curriculum. In May, a building survey will be conducted to measure the effectiveness and teacher attitudes on the whole process." Mr. E. states that all teams have carried through with this expectation.

Secondly, Mr. E. discussed his role in the promotion and incorporation of cognitive strategies into integrated units. He feels his role has been to assist in teaching the staff development sessions, to present examples of cognitively guided instructional strategies, and to provide opportunities to have small-group follow-up discussions. "More than anything, I've done a lot of cheerleading to make cognitively guided instruction happen. Being involved in a building construction project this year, my time has been limited, but in the future, I want to devote more time to the instructional learning process using CGI."

Mr. E. was then asked to comment on teacher attitudes toward cognitively guided instruction. People in "Beyond Effective Teaching" are "philosophically receptive to the theory, notions, and applications of CGI. The discomfort or apprehension comes with the translation into their classrooms."

"I've been pleased with at least half of the class where I've observed outstanding examples of people taking the risk and applying the information on CGI in a meaningful way into their content. The other half of the class is still 'on the fence.' Although receptive to the power of the idea, some still require time in order to carry through with implementation."

Mr. E. cited specific examples of teachers using cognitive strategies in the following interdisciplinary units: sixth grade social studies units on Egypt, China, the Middle Ages; a sixth grade health unit on AIDS; the Kiwanis pond effort; seventh grade newspaper unit; and an eighth grade unit on nature study. The principal expressed that teachers provide for individual learning styles through the use of cooperative learning strategies, but now some (10 or 12) are beginning to utilize cognitively guided instruction. He added, "In co-teaching classes, where a special education teacher is present, efforts to modify curriculum also provide for individual differences."

Asked whether or not student academic and behavior values have improved at Franklin since restructuring curriculum, the principal noted how he has, over the course of the year, eaten about 12-15 lunches with small groups of 12-20 students. "I ask them questions about curriculum changes. I get positive responses - they are motivated by integrated units; they find them 'not like regular school.' They feel they are learning a lot; students go home and tell their parents. Parents are excited about integrated curriculum, and we get positive feedback to the school about curricular changes." Mr. E. thinks students and parents are appreciating the freshness and creativeness of such an approach.

In response to improvement of total educational climate at Franklin due to curriculum restructuring, students again are positive, as are most staff members. There has been "no outright rebellion" about trying integrated curriculum. "We proposed a strong intent with this approach and how it enhances learning; I personally have experienced no specific resistance. The survey in May should provide me with feedback. Integrated curriculum creates some discomfort for people because they are required to make some changes."

"I do not see negative attitudes of teachers critically impairing school climate. I do, however, see some people who are apprehensive, nervous, and unhappy about expectations that they do something different with curriculum. I do hear about some of that via the grapevine. We have planned and revised curriculum restructuring along the way. We have scaled down when things become too ambitious. For instance we've not used the Beane model based on student interests and concerns; we've rescheduled this and a thorough look at the immersion model for next year."

Mr. E. reported that at another middle school in the community, the response about changing curriculum was negative. As that situation was analyzed, efforts in planning, inservice work, and small group discussions that were a part of Franklin's building plan were not systematically planned at the sister middle school. Teachers, consequently, in that building were confused and indignant about the process of curriculum integration. On the other hand, Franklin staff appears to have a healthy interest.

When asked to disclose what worked well in "Beyond Effective Teaching," Mr. E. responded, "The open discussions that have occurred provide a way for people to communicate and understand each others' viewpoints. We've had interesting and productive conversations about instructional practice in their classrooms as well as its relationship to cognitively guided instruction. The small group activities have also provided opportunity to practice strategies that were introduced."

"Of course, the staff development presentations have been good!" When the writer mentioned some sessions could be improved upon, Mr. E. questioned, "Was a specific presentation the issue, or the fact that CGI is really starting to 'hit home'? The evaluation of the last presentation (on reciprocal teaching and jigsaw) was that it's causing something to happen! If a presentation skims the surface, it's not very effective, but if that presentation causes people to do some 'gut-wrenching' thinking and some real construction in their own minds about what CGI is, then, perhaps, we've been more effective than we think."

To improve the class, if we were to teach it again, Mr. E. expressed, "We need to discuss, during each session, how a particular strategy or topic manifests itself within the paradigm shift. We need to clarify how that paradigm shift is happening in each class. Perhaps we could have class members do a thinking log and some self-reflection using the computer lab during each session."

Another suggestion was to, perhaps, run the class in six consecutive sessions so continuity is provided, give teachers time away for a month to apply strategies, then come back together to discuss practices and learn new techniques.

M. E. remarks that staff development needs still exist. "Much instruction at Franklin is still teacher-directed and teacher-presented. We need to think about strategies, approaches, and models that engage students actively in the learning process. We need to give teachers opportunities to engage students as active partners in the learning process."

"We also need to show teachers different methods of showing student progress, that evaluation can be accomplished in different ways, not just by giving a paper-pencil test or a quiz. We need to reintroduce teachers to use observation as an evaluative tool. If we are constructing different classrooms and new learning environments, we need more staff development on assessment."

As far as members of "Beyond Effective Teaching" being knowledgeable about the relationship of cognitive instruction to curriculum integration, Mr. E. discloses that one-half of class actively uses cognitively guided instructional strategies (10-12 people), but only one-quarter of them (5-6 people) have related cognitive strategies to integrated curriculum.

New Learnings from Staff Development on Cognitively Guided Instruction

When interviewing selected staff members about cognitively guided instructional strategies, two sixth grade teachers claimed they did not gain new information; instead, they felt old strategies were revisited and reaffirmed. For example, they reminded the writer that they consistently teach their students how to paraphrase, summarize, generate questions, clarify, elaborate, and predict. One cannot disagree with these statements; however, a third sixth grade teacher stressed how she has become more aware of "thinking about thinking." She, too, feels she's been teaching the higher-order thinking skills, but not put together as a complete process, as in reciprocal teaching, or instructing students to think aloud to solve a problem. This math teacher explained how, over the years, instinct told her that if students explain their solutions, they understand them better. Now, she states she has some systematic steps and a planned process to teach students in a metacognitive manner. Vygotsky's (1978) idea of effective imitation is understanding an action, not merely reproducing it. He further cites how understanding is a process that requires organization, observation, and internalization.

Both, a sixth grade social studies teacher and math teacher, pointed out that learning the RAP strategy for teaching students to paraphrase was new. A seventh grade language arts teacher confirmed that she has been focusing on metacognition during the current school year. She states, "I see the need to know how you think.

How you come to an answer or understanding creates a deeper understanding of self and concepts." She also is a firm believer in the use of Bloom's Taxonomy.

Another seventh grade language arts teacher affirmed new learning skills as well: She claimed that open discussions and sharing thoughts throughout the class helped her develop new ideas for the oceanography unit; she felt that small group work, ways to generate questions, modeling examples in reciprocal teaching were methods that are enhancing her teaching. Direct explanations and the verbalization of solution steps reflect "natural constructive processing" (Chi & Bassok, 1989). The same concept was specified by yet another sixth grade teacher who concluded that giving choices of projects to students during social studies class gives ownership and depth to their learning.

The learning support teacher at Franklin Middle School declared that the paraphrasing strategy is significant in helping seventh graders understand the content of their science and social studies as well as in teaching students how to read music. Mr. V. also mentioned how valuable the handouts and readings were. He related his understanding of metacognition to students, in this age of information, who need to know how to access concepts, relate to, and transfer ideas into the real world (Reid & Stone, 1991; Toepfer, 1992).

A learning disability teacher, the learning support teacher, and an eighth grade science teacher all supported the use of computer technology, especially the use of cognitive processes involved in designing knowledge with hypercomposition. The special education teacher described a hypermedia project using the students' abilities (not their disabilities). The unit was designed to motivate the students to complete a creative writing activity by using Hypercard and other computer skills to create a computer game. Students were assigned to create a game in which the player would have to solve clues to locate and collect baseball cards. In keeping with Dewey's (1938) philosophy of learner-centered education, the six learning disabled students were assigned one event in the over-all story to develop into a segment of the computer game. Students were required to write, in story form, the description of the place where the baseball card would be found, why they placed it in that location, and what clues they would give to the game player to help locate the card. When the project was completed, the students were required to play the game and solve the other students' events. Appendix Q includes objectives of the hypermedia project, how the students were evaluated, and a student evaluation form on the overall project. Through the process of design, these students developed new ideas about themselves and their writing as authors of knowledge (Lehrer, 1991). Throughout the project, students were asked to keep a computer journal where they were asked to respond to application questions as well as to analyze their feelings. Responses suggested frustration to excitement to feeling unsuccessful. Appendix R provides the computer journal of one eighth grader that illustrates the inconsistency in this student's affective development. The eighth grade science teacher concurred that, in Dr. Lehrer's process, cognitive instruction through the use of higher-level thinking with a thematic approach fosters the self-direction of students (Bruner, 1977).

Reaffirmations of Learning

The sixth grade math teacher, Mrs. S., noted that she has taught the four components of reciprocal teaching in reading class when a good discussion on a literary story takes place. Although she did not teach summarizing, predicting, clarifying, and generating questions in a planned approach, she stresses that reciprocal teaching "happened" now that she knows all four elements of the reciprocal process. Fourteen teachers revealed their use of cooperative learning strategies prior to "Beyond Effective Teaching." One sixth grade teacher disclosed the use of some cognitive strategies, but previously did not have labels for them. This teacher also informed the writer that she has modeled thinking aloud when teaching students how to self-edit language compositions (Warden, Allen, Hipp & Schmitz, 1989).

The reading-writing specialist remarked, "Hypermedia is an area in which I would like to have the opportunity to do more." The learning disabilities teacher who framed the computer game writing unit indicated that, during the project, metacognitive modeling was definitely utilized (Strommen & Lincoln, 1992);

however, prior to the class, she would always think aloud for the students as well as tell them why she was thinking in a specific way. She insisted that her self-talk has been a positive affirmation for at-risk students.

Seventh grade language arts teachers emphasized their prior knowledge and broad use of integrated curriculum activities within their own classroom. One discussed how grammar becomes more meaningful when integrated into the novel units. The other described how she integrates the terms of reciprocal teaching with the literary terms of foreshadowing, characterization, point of view, and theme.

The learning support teacher related the use of cognitive instruction to the training from "Teacher Effectiveness - Student Achievement" (TESA). He proposed to try an experiment between two similar, but heterogeneously-grouped science classes. One class would be taught in the traditional manner using TESA strategies; the other class would be taught interactively with cognitively guided strategies (Sylwester & Cho, 1992-93). After a designated period of time, the two groups would be compared in their knowledge and use of self-talk, self-reflection, and self-management.

Use of Cognitively Guided Strategies (CGI) Within Integrated Curriculum

The reading/writing specialist team teaches in a sixth grade social studies class. She describes using reciprocal teaching and jigsaw cooperative learning. "Students were assigned portions of chapters to teach to the class. Guidance was provided by both teachers. Although this was not really a cross-curricular unit, students practiced social skills expected in other classes." She also specifies, "Cognitive instruction is a way to provide success for students during the curriculum integration process. It provides success for students of all abilities."

A sixth grade teacher, Mrs. A., responds that "cognitive strategies have become an important component for integrated units. In fact, such strategies are the 'glue' that holds curriculum integration together. The strategies assist in implementing integrated instruction and pulls together the learning-how-to-learn concept."

Seven sixth grade teachers participated in "Beyond Effective Teaching," so many quotes and feelings about CGI come from these staff members. Several other people stress that they use the paraphrasing strategy along with other critical reading and thinking techniques. They feel that strategies make integration easier, and with integrated curriculum, each team can take advantage of the strengths of different team members (Merenbloom, 1991).

Still within sixth grade, another teacher uses Bloom's Taxonomy of Educational Objectives: Cognitive Domain (1956), reciprocal teaching, RAP, and simple jigsaw cooperative learning. She believes she makes students aware of the different types of questions. When she gives students choices of questions to answer in reading class, she gives more credit when students choose to answer the higher level questions of analysis, synthesis, and evaluation (McTighe & Lyman, 1988). Continuing on, the same teacher emphasized how her team has integrated spelling into content-area teaching for the 93-94 school year. The use of metacognitive self-talk occurs when students are asked to discuss where "trouble spots" may be found in certain words. Students are asked to describe and cite phonetic rules they would use in order to spell the word correctly (Deshler & Schumaker, 1986; Hunter, 1986).

Mrs. S. also revealed using a cognitive strategy when teaching the sixth grade environmental unit. Students are asked to analyze the bones found in owl pellets, to try to fit some skeleton parts together, all to predict what type of rodent the owl may have eaten! She also confirmed that making a compass requires higher level thinking skills as well (Barell, Liebman, & Sigel, 1988).

Staff members from both seventh grade co-teaching teams agree that CGI fits into curriculum integration. One language arts teacher, Mrs. S., points out, "Teachers need to consciously work at using CGI strategies; we need to just do it and carry through with this concept." Mrs. P., the other language arts teacher in seventh grade, emphasizes that cognitive instruction helps students see the relationships of integrated curriculum. She further verifies, "Students need to feel there is a purpose for learning." Beane (1993) concurs. Mrs. P. also stresses, "Cognitive instruction helps students think about and dissect their gains in knowledge and understanding."

She remarks that it is the teacher's job to make CGI comfortable for students. She asks students such questions as, "How did you come up with the answer?" or "Why don't you take time to think about it?" Mrs. P. claims that having students keep a journal is a good way for them to write about this thinking.

On one journal entry, students were asked to respond to an evaluative question: "What you are speaks so loudly, I cannot hear what you say ... What does this mean to you?" Jenni, an introspective early adolescent writes, "It means that no matter what you say, no one will believe you if you act differently. It means your actions are more important than what other things you say. It means people are not going to want to listen to you if your actions are bad. It means if you "goof off" no one is going to want to sit by you or be with you. It means what you feel is really important compared to what you say."

On an entry of her choice, Jenni declares, "I don't think animals should be used for testing. It is our medicine, and we should be the ones to die! It isn't fair for helpless animals to be killed." On one more entry of choice, Jenni confesses, "I don't know why we have to take a foreign language. I don't know why my parents don't let me go out with guys. I don't know why I'm so hot. I don't know what to write!"

Mindy describes a favorite taste, scent, and touch. "My favorite taste is strawberries that we just picked outside. My favorite scent is a cake my mom just took out of the oven. My favorite touch is my cat's fur when I pet him. He has long white and brown fur and weighs 13 pounds. His name is Snicker."

Students were requested, on another occasion, to list ten things they think of during spring, then to create a poem using those words. Melanie emphasizes "flowers, birds chirping, trees with leaves, bugs, sunny days, rain, squirrels, plants, shorts and sunglasses." Her poem stresses,

"S pring
P lants growing
R ain falling
I like sunny days
N ice weather
G rowing flowers."

Yann indicates that he would take his gold necklace and his family with him during a flood. "I would take my necklace because my grandmother gave it to me and I would take my family because I love them."

Maria considers an area of Belize, while studying the Jason Project, that she would like to research. "I like water, so I would study the coral reef. I would study the Maya civilization, the canopy of the rainforest (I like high places), and caves. My dad enjoys caving; since I've never caved before, I would like to go with him." (See Appendix S for more samples of seventh grade language arts' students' journal writing).

A learning disabilities teacher, co-teaching in seventh grade, suggests that "CGI strategies are the tools that make integration work." She further affirms, "As LD students' resource teacher, it is my job to help them make connections so they can transfer information." Caine and Caine (1991) indicate that the brain has an inexhaustible capacity to learn. "Brain-based learning rests on the fact that the various disciplines relate to each other and share common information that the brain can recognize and organize. This, for instance, is at the heart of thematic teaching" (pp.4-5).

To help learning disabled students make connections during the Jason Project, a General Motors funded program that is environmentally-related, this LD teacher taught vocabulary and concepts about Jason, the underwater research device, prior to trips to GM to see live broadcasts of researchers at work. Mrs. M. explained how this strategy made the Jason Project an authentic learning situation for her learning disabled students. Since the learner constantly searches for connections, educators need to "orchestrate the experiences" from which learners make understandings (Caine & Caine, 1991). The more students talk about what they are doing, and the more teachers use the appropriate vocabulary while teaching, the greater the learning.

The learning support teacher at Franklin Middle School, Mr. V., also accesses prior knowledge in his co-teaching science class. For example, when teaching about the features of the earth's crust, he brought a loaf of bread to class and related the bread's crust to the earth's crust. Mr. V. explains, "Relating the earth's crust to what students already knew and then delving and probing to make them think, they were readily understanding new concepts about the earth's crust."

Interpretations about Video-taped Student Presentations

Brain research supports that learners need to be engaged in listening, talking, viewing, reading, acting, and valuing (Caine & Caine, 1991). Such was Dr. Lehrer's philosophy as he presented his process of communication and research to the "Beyond Effective Teaching" class. Dr. Lehrer's primary focus was to emphasize that educators expand the quality and quantity of ways in which students are exposed to content. He called this process "immersion" (Lehrer, 1991). Through immersion into a subject such as the Civil War, students can learn also about themselves and life. Caine and Caine (1991) conclude that immersion in one subject helps students link information to other subjects and personal meaning, and at the same time, expands their knowledge of vocabulary, history, and psychology.

Several teachers in "Beyond Effective Teaching" experimented with the immersion process and videotaped their results. Following is a narrative describing and interpreting some of their experiences.

During a unit of study on China, a different social studies teacher videotaped her students' presentations. In this class, the students were very aware of their roles as authors of knowledge. Each member of the small group "taught" a segment of the lesson.

One group of three students discussed the major religions and philosophy of China - Taoism, Buddhism, and Confucianism. Each group member presented a short oral report of her/his designated topic using note cards and the overhead projector. To get the class actively involved, after their researched presentation, each student took turns asking questions about the information they had conveyed. When an audience member answered the question correctly, s/he received a piece of candy as a reward. The researcher noted, by watching the videotape, that all three group members shared responsibility (Johnson & Johnson, 1989); however, the types of questions asked were at the levels of knowledge and comprehension which required one correct answer. Luckily, the majority of audience participants raised their hands and undoubtedly were confident their responses were correct. Mrs. A. divulged that this presentation was good, but not necessarily excellent. As an early experience in using the immersed process, the presenters fulfilled their assignment requirements and appeared to enjoy their roles. The student audience was attentive which illustrates, to the researcher, respect for peers' knowledge and feelings.

Another group in the same sixth grade class taught a lesson on the early Chinese dynasties. Three girls were in the small group. During this observation, the writer noticed that each student did not share equal responsibility, yet the lesson was well-executed. One girl facilitated round-robin oral reading of the assignment which was taken from the social studies textbook. This student seemed to be masterful in obtaining audience participation; she always asked for volunteers to read, and she was able to engage most of the class in taking a turn without being authoritative. At the end of the reading, the same girl asked for audience participants to share main ideas from the reading. Here, the audience reverted to shyness and nobody volunteered. Hence, this student presented the main ideas in a summarized paragraph. Classmates again participated by sharing the information provided on an overhead. Next, the second girl in the small group explained vocabulary from the reading with definitions presented on the overhead. Everyone was then asked to take out a piece of paper; a five-question quiz was introduced on the overhead by the second girl. Approximately three minutes was given for the quiz when students were asked to exchange papers. Oral discussion of the quiz questions ended the lesson as individuals saw how well they did. The third girl smiled a lot and collected the papers.

According to Barell, Liebmann, and Sigel (1988), that to foster increased thinking, we need to create an environment which develops a sense of independence within a social atmosphere of sensitivity toward others. Although the two lessons on China were not perfect, it was evident that Mrs. A. was fostering her students' thinking in an autonomous way. In both videotaped segments on China, the audience was listening and responding. Both lessons showed high expectations for achievement and cooperation. It appeared that the total class was functioning independently, although the writer knew the teacher was operating the video camera. She did not interfere with the lesson presentations; it was apparent the students approached their problem by planning a lesson and monitoring their progress. The lessons were not without "glitches," and hopefully, self-evaluation questions such as, "How well did I do? What worked well and what didn't? What would I do differently next time?" would help these sixth graders learn about their own thinking. Appendix T shows a peer evaluation form using criteria in regard to content and social skills.

During the last quarter of the school year, Mrs. A.'s social studies classes will again engage in immersion lessons on the Middle Ages. A packet for the cooperative learning groups with assignments is presented also in Appendix T. Using the four components of reciprocal teaching - summarizing, question generating, clarifying, and predicting - will be a focus of student presentations.

Successes and Frustrations About Cognitively Guided Instruction

During the interview process, teachers in "Beyond Effective Teaching" were asked to comment on what worked well when teaching CGI strategies with integrated curriculum and what suggestions they had for improvement. Answers disclosed were diverse:

"Cooperative learning activities work very well. The improvement needed is time, time, time, time, time!"

"The way we are delivering instruction - a hands-on approach where students observe through their experiences - addresses different learning styles. Students are motivated and ask why they can't do activity-based lessons more often. Teachers must change their attitudes and thinking when working at restructuring curriculum. Quality time to plan integrated units is also a dire need."

"Having Dr. Lehrer present his research and communication process near the beginning of the inservicing set a negative feeling tone. Make-and-take sessions on cognitive strategies may also have been nice."

"Perhaps having Dr. Lehrer come near the end of the staff development sessions would have been better. In this way, his process would have made more connections for me. His process is like a 'pie in the sky,' but now it's beginning to make more sense."

"Next year, our seventh grade teams are really going to push integrated units and active instruction. Our parents and administration are positive. Students, in our teams seem to respect and trust us. Teaching social skills is important and kids say 'it's fun!'"

"Dr. Lehrer's model was a good way to start ideas for building. Teachers talking and sharing together is what helps me learn."

"We really needed to have background first to help people see connections. Dr. Lehrer's presentations threatened me!"

"I can see models such as Dr. Lehrer's enhancing our affective environment such as Positive Action during Advisory time. I have also requested my third hour math class to keep an on-going thinking log for problem-solving activities. The way they explain their thinking is interesting."

One problem to solve follows: Neilson Elementary School raised $2,516 in a jump-rope-for-heart fund raising event. What was the average amount raised by each of the 68 students participating?

Soktheath notes, "Write a number sentence. Divide 2,516 dollars by 68. Now you got your answer - 37 dollars!"

Another problem states: To make a very strong freezer bag, two sheets of plastic with a combined thickness of .05 of an inch have been bonded together. The first sheet is .0345 of an inch in thickness. Which sheet is thicker? How much thicker?

David responds, "This looks hard! You take .05 - .0345 and that equals 0.0155. Sheet one is thicker. Then you take .0345 - .0155 which equals .0190. Sheet one is .0190 of an inch thicker than Sheet two."

Appendix U provides thinking log questions with more individual student responses reflecting intrapersonal and metacognitive strategies. Jessica is experiencing difficulty.

"Some staff changes for the 93-94 school year have improved building attitudes; relationships among team leaders have improved. Team leaders this year are not so dictatorial or possessive of their subject area. They have a broader picture of what's better for the whole school."

From the progressive philosophy of John Dewey materializes the contemporary social constructivist learning theory. Education is a process which requires continuous social and experimental participation. Dewey (1938) maintained that social change takes place through education; in fact, living one's life and learning through life's experiences is education. The above quotes from teachers promote the constructivist perspectives of teacher and student reflection, metacognitive techniques, reciprocal teaching, cooperative learning, and collaborative problem solving.

The idea that some teacher attitudes must change is still apparent. Merenbloom (1991) maintains that staff development programs must be continuous to help teachers learn about the team process. Most middle-level teachers have not taken courses in the team process; yet, it is significant that they function successfully in teams if the middle school concept is to work in this country. Quality time for team collaboration is a necessity at Franklin Middle School.

Along these lines, two more teacher comments were interesting:

One team leader thinks "Beyond Effective Teaching" was not as practical as she or her team hoped it would be. The team wanted specific help in writing integrated units. They wanted basic, more concrete ideas; they felt someone (the writer) should have worked closely with particular teams to help make CGI and curriculum integration work at a personal level. The staff development sessions were "no way near what my team thought they were going to be."

Another team leader specified that to be creative in looking at restructuring curriculum, longer planning blocks are required. "I'd like to look at the 'zero-based' curriculum idea, beginning with no curriculum, then bringing back only what can be justified. A two - three day workshop would be helpful with such an initiative."

A nontraditional curriculum can be transformed to a holistic process.

Curriculum integration is a design in which cognitively guided strategies and social skills can be combined with content drawn from multiple disciplines. Cognitive strategies are tools to encourage young adolescents to construct a broader and deeper understanding of themselves and their world (Caine & Caine, 1990).

Student-Teacher Relationships

The majority of teachers in the "Beyond Effective Teaching" class feel teacher-student relationships within their respective teams are "good to excellent."

The seventh grade language arts teachers present the idea that both seventh grade teams work well together. Both teams plan and coordinate the same integrated curriculum units, and this, they state, keeps peace with all seventh graders. Since organization of curriculum is well-planned, there are good teacher-student relationships. Well articulated goals and a team mission illustrate factors of student well-being (Ramsey, cited in Gonzales, 1993).

Likewise, most teachers in both sixth grade teams cite "great" student-teacher relationships. They feel that all students are being treated fairly, that they also appreciate limits and expectations. They believe students are receptive to new ideas; they enjoy options and choices since most students are not interested in the same things. Schmuck and Schmuck (1988) cite the relationship between effective leadership, friendship, and class cohesiveness.

The learning support teacher and the reading-writing specialist consider a building perspective on teacher-student relationships. "Overall, relationships are positive. The vast majority of Franklin teachers enjoy middle level students and the challenges they present. This is evidenced by child-centeredness - their willingness to work with students and to make lessons meaningful." This quote substantiates Beane's (1992) proposal that

> "middle school curriculum be organized around thematic units whose topics might be found where widely shared concerns of young adolescents intersect with significant issues in the larger world. The idea of using such personal, social sources is not anti-intellectual as it does not walk away from knowledge and skill, but rather repositions

> them in the context of engaging themes where they might be brought to life and more thoroughly learned" (p.34).

On the other hand, one sixth grade teacher proclaims that student-teacher relationships has nothing to do with curriculum integration. She feels there is no "buddy" relationships between students and teachers on her team. She laments, "One thing we are doing wrong in education today is that we're trying to make school such a joyous occasion that students no longer have as much respect. I do feel, however, that we are trying to produce a more affective atmosphere through integrating curriculum units." An eighth grade teacher agrees that student-teacher relationships depend on individual teachers, not on integrated curriculum.

Educational Climate

The majority of teachers interviewed insist educational climate at Franklin Middle School has not improved over the 1993-94 academic school year. Although teacher-student relationships throughout the building appear to be positive, teacher attitudes seem somewhat negative.

One sixth grade team reports good relationships among teachers within their own team; one does not. The two teams express some controversy between "houses." Coercion by one team leader is confirmed by staff members in both teams as reasoning for poor group dynamics. One teacher expresses a strong opinion: "Are curriculum decisions being made for the betterment of kids? Are students any better off because they supposedly 'enjoy' the environmental integrated unit? Are changes being made because someone is telling us to teach eight integrated units?" For improvement to occur, Schmuck and Schmuck (1988) stress that negative cycles of interpersonal relations need to be confronted. Another sixth grade teacher wonders if his team is restructuring curriculum fast enough for administrative satisfaction. These two staff members feel that the educational climate is present and underlying; however, quality time is needed to build and "polish off" a successful integrated unit. Another sixth grade teacher positively claims "that some people are attempting creative ideas, but we still have many lecturers."

Teachers who work in the seventh grade teams cite teacher attitudes as a problem. They reveal that new ideas are good, but some teachers are criticizing and undermining the drive toward curriculum integration and other curricular restructuring. One seventh grade teacher thought Dr. Lehrer's model was a good way to start building new ideas. "Some teachers, though, want to be left alone; they want to keep the traditional ways; they are just waiting for retirement." A special education teacher who works with the seventh grade teams points out that "attitude is the key. Some teachers are genuinely interested in working with pre-adolescents, but some teachers don't like kids!" The self-fulfilling prophecy seems at work here and contributes to low expectations and poor educational climate (Ramsey, cited in Gonzales, 1993).

One other factor affecting Franklin's educational climate is described by teachers at all three grade levels. A sixth grade teacher describes the building climate as "tense" and is "miffed" at the lack of consistency with discipline in the building. He claims there are little consequences for students and feels there is little support or back-up from the assistant principal. Another sixth grade teacher agrees that discipline has "gone downhill" and that "teachers are being treated less as professionals." Teachers are not allowed to use the copiers, and they must sign in and out of the building when leaving during preparation times. An eighth grade teacher states, "There are a myriad of reasons why the educational climate is not positive during this school year. No consistent discipline limits, a change in leadership, and building construction might be reasons for some teachers' less than positive attitudes."

Summary Statements

The major conclusion drawn from the results of this project is that the 19 participants who volunteered for "Beyond Effective Teaching" increased their knowledge, understanding, and use of cognitively guided instructional strategies. The

12 participants who were consistently involved in the staff development sessions actually implemented more strategies within their classrooms than those who were not able to be involved in every class presentation. This observation was verified through interviews with staff members. The 12 educators who consistently attended could also, obviously, discuss the meaning of cognitive instruction as well as its relationship to curriculum integration at a higher level. The post-surveys, teacher interviews, and key informant interview verified success of the staff development sessions and their transfer to the classrooms.

The same evaluation instruments suggest, too, that "we've only just begun!" One regular member of "Beyond Effective Teaching" remarks, "I found it uncomfortable to be faced with right-brained activities in this class, being a left-brained person." Joyce and Weil (1986) state that many teachers experience some degree of discomfort when they are transferring new skills into practice. These are at least three reasons for discomfort as teachers begin to add new strategies to their active teaching repertoire: Using new skills takes greater effort than using the old ones; new strategies feel more awkward than the familiar ones; and risk-taking is involved. Teaching does not go smoothly until executive control or effective use of the skills are achieved.

Then, too, as planning for the 1994-95 school year begins, instructional teams are undergoing personnel changes. The following comments reveal this dissatisfaction: "Integration with teams takes time. We just get started, then get realigned;" and "Integration of curricular themes takes years to develop and refine. It's too bad we have lost two years of integration work with the reconfiguration of the sixth grade." Merenbloom (1991) suggests numerous elements for the successful implementation of the team process. One is that psychological support and feedback by administrative leaders must be positive and nurturing. Staff development processes must "include both cognitive information and a release for anxieties" (p.142).

The above discussion leads to the secondary reason of the practicum study - to improve teachers' attitudes and students' satisfaction about teaching and learning. Although the post-survey results showed growth in the areas of student academic and behavior values as well as student-teacher relationships, comments during teacher interviews differed. Some staff members cited changes in building leadership and building construction as possible reasons for a "slump" in educational climate. The overall consensus, however, is that the total educational climate of Franklin Middle School is positive. Merenbloom (1991) advocates that graduate and inservice courses, resource persons, coaching (sharing), and mentoring are processes or staff development activities appropriate to use in implementing curricular change at the middle-level.

Two thoughts are certain: Staff development in the processes of cognitive instruction can change middle level teachers' mental models about teaching and learning; however, that change takes place over time. Can educational reform at the secondary level afford more time?

Recommendations

The following recommendations may benefit others who plan to implement staff development training sessions on cognitively guided instructional strategies.

1. From the interviews with staff members who were involved in the project, the writer concludes that the "Beyond Effective Teaching" class might have been enhanced by first describing and modeling separate cognitive strategies, then inviting Dr. Richard Lehrer from UW-Madison to present his model of communication and research processes. By the end of the inservice sessions, staff members understood how the cognitively guided instructional strategies presented during the second semester could be taught within Lehrer's model which had been initially demonstrated. Presenting the "whole picture" near the end of the project may have given staff members better connections and integration of Lehrer's communication and research processes.
2. The majority of staff development modules were held after school from 3:45 - 5:15 p.m. Although the time of the inservice training was consistent, the day of the week changed due to presenters' schedules. Since "Beyond Effective

Teaching" was voluntary, a totally consistent class schedule may have allowed a larger number of staff members to be present more often.

3. At least half of the people interviewed, suggested that sharing ideas and classroom techniques among teachers was most beneficial to them throughout "Beyond Effective Teaching." Planning adequate discussion and debriefing time within each module is significant.

4. One teacher recommended a class notebook be compiled prior to the first session. The notebook would include the dates, objectives, and readings for all 12 inservice modules. If someone could not be present at a specific session, that person would have vicarious access to the concepts s/he missed.

5. Another teacher proposed that some make-and-take sessions be a part of the inservice modules. Concrete, direct application of the cognitive strategies would give teachers practical and hands-on materials to take back to their classrooms for immediate use.

6. Two members of "Beyond Effective Teaching" addressed how cognitively guided instructional strategies coincide with the school district's staff development programs such as "Effective Teaching" and "4-MAT Training." One teacher recommended our 12-module strategic instruction be an option within the district's staff development opportunities. To make this happen, the district staff development committee should hear the proposal.

7. Quality time must be affirmed by administrative personnel if a curricular paradigm shift is to be carried through successfully. Thinking through interdisciplinary objectives, finding an overlap in curriculum, and actually writing plans for integrated units are but a few of the ingredients required to produce a true paradigm shift in curriculum.

8. The pre- and post-survey data was administered and analyzed with much variability. Perhaps it is the researcher's lack of experience in analyzing research data, but it seems that the survey results, in some instances, did not

represent a true picture of curricular change at Franklin Middle School. In order to collect hard data to prove that a problem existed, the pre-survey was administered to the whole faculty. Thirty-two surveys were returned which represents approximately three-sevenths of the total middle school staff. Then, twenty teachers volunteered to.participate in staff development on cognitively guided instructional strategies. Nineteen post-surveys were returned by this group of professionals, participants of "Beyond Effective Teaching." A final recommendation would be to have congruent pre- and post-survey groups.

Dissemination

There are definite plans to share this practicum with appropriate audiences. The writer's plans for this practicum's dissemination will begin within a local scope, then broaden to the state, regional, and hopefully the national level.

Staff Development in Cognitively Guided Instruction (CGI) Theory at the District Level

The principal at Franklin Middle School and the writer presented the two modules on multiple intelligences on March 1, 1994, at a district staff development session. Twelve teachers opted to learn about the theory of multiple intelligences. Elementary and secondary teachers comprised the audience. The evaluations received at the end of the two-hour workshop were positive. At the culmination of the session, teachers were asked what they had learned and what questions they might have about teaching cognitive strategies.

One teacher commented that different people learn in different ways; whereas, another person noted how the same people can be taught in different ways. A perceptive teacher indicated how easy it is to teach to the verbal/linguistic and the logical/mathematical intelligences and how challenging it is to find ways to teach to the other cognitive levels. The consensus of the group at the conclusion of the workshop was that teachers must keep multi-modalities in mind when planning and delivering lessons; for teachers to help students become lifelong learners, they must change their style of teaching.

Several questions involved restructuring curriculum: How should teaching proceed in order to limit lecturing and provide more interactive opportunities for students? Is the current physical set-up of our schools conducive to cognitively guided instruction? Another question addressed a broader framework: How do the educators who want to change curriculum get their colleagues to change; how do we get society to accept the changes?

Continuing Staff Development at the District Level

The district's curriculum and staff development supervisor verifies that cognitively guided instructional theory relates well to district vision, goals, and objectives. A district-level integration task force and assessment committee are working on a systematic approach to broaden curriculum integration at all levels. To that end, effective teaching principles, 4-MAT training, Content Reading Including Study Systems (CRISS), and cognitive strategies are but a few methods to incorporate into an instructional and evaluation theory for the 21st century.

The facilitator of the March 1 district staff development program wanted to cancel the session on multiple intelligences because only 12 people had expressed interest. However, the supervisor objected to cancellation because "the word on multiple intelligences and cognitive instruction needs to spread." The recommendation by one member of "Beyond Effective Teaching" will undoubtedly not go unheeded: Cognitively guided instructional theory and strategies will be included in the district's staff development programs.

Disseminating CGI to Parents

The principal of Franklin Middle School and the researcher also presented the two modules on multiple intelligences to the district's Special Education Parent Advisory Committee. These parents are leaders and advocates for the new kind of learning presented by cognitive psychology. These parents were agreeable to the fact that instruction should address all seven ways of knowing, not just the usual two that proclaim lecturing as the priority method for learning to take place. They were in favor of participation and teaching "thinking out loud" or "self-talk" as a means to learn. They were interested in having their special needs children taught through a multi-dimensional approach. They also expressed how they wanted to sit passively and take in the knowledge about to be disseminated; they had to work at being interactive in small groups. This points out how adults are programmed into one mind-set about teaching and learning - they wanted to learn in the same ways they had been taught!

Dissemination at State and Regional Levels

The principal and the writer are interested in restructuring middle level curriculum from the viewpoint of cognitive psychology. Dr. Lehrer's process of "students as designers of knowledge" and students as self-discoverers has merit as a model for cognitively guided strategies to be taught. Both men and the writer are interested in teaching not just thinking, but students thinking for themselves. Both men and the researcher want students to identify problems in their daily lives and work toward solutions.

Working corroboratively with Dr. Lehrer, the principal and the writer plan to present cognitively guided instructional theory and strategies at state and regional conferences. Two state conferences which consistently indicate a need for presenters is the annual special education conference and the annual seminar for middle level educators. Another possibility for presenting at the state level is with the association of school administrators.

Dissemination at the National Level

To begin a process of becoming nationally recognized, it is the writer's hope that this practicum report will be selected for inclusion within the Educational Resources Information Center (ERIC). The writer has also co-authored one publication. Perhaps one would not be dreaming too precociously to suggest that the principal of Franklin Middle School and this researcher might collaborate to co-author a published book which proposes a restructured middle level curriculum.

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Appendix A

Definitions of Terms Related to Practicum Project

Definitions of Terms

1. *brain-based learning* - meaningful learning and the art of capitalizing on experience; involves acknowledging the brain's rules for meaningful learning and organizing teaching with those rules in mind
2. *cognitive instruction* - students' conscious, thoughtful, and selective use of strategies to enhance specific understanding of skills and concepts
3. *constructivism* - a contemporary learning theory which describes education as a process requiring continuous social and experimental participation
4. *cooperative learning* - strategies in which students both give and receive help through oral discussion that leads to new insights as well as social cooperation
5. *cross-curricular thematic units* - a sense of wholeness that emerges in students' minds from seeing how academic subjects relate to each other and how human beings relate to the subjects
6. *elaboration* - strategies to help students create meaningful connections between what they already know and what they are attempting to learn
7. *hemispheric differences* - the rational, analytical, sequential and highly verbal learner versus the intuitive, synthesizing, sensory, and spatial learner
8. *IEP process* - the individual educational plan of goals, objectives, criteria, and procedures for students who are placed in exceptional educational needs (EEN) programs
9. *learning modalities* - the multifaceted experiences allowing students to express visual, tactile, emotional, or auditory preferences when learning; activities of learning which exhibit the complexities found in life
10. *learning style differences* - variability in preferences, inclinations, opinions, and talents when observing any group of human beings

11. *metacognition* - awareness of one's thinking; self-appraisal; self-management; self-regulation

12. *M-Team process* - a multidisciplinary approach to evaluate individual perceptual, academic, physical, and/or social-emotional needs for placement in an exceptional educational needs (EEN) program

13. *reciprocal teaching* - a dialogue strategy between students and teachers about the meaning of the content being studied; four strategies are incorporated - question generation, summarizing, clarifying, and predicting

14. *scaffolds* - concrete prompts or procedural facilitators specific to a strategy being taught, yet general enough to allow application to a variety of different contexts

Appendix B

Middle School Curriculum Integration Survey

DATE: May 25, 1993

FROM: Judy Schmitz
Program Support Teacher

TO: Franklin Middle School Staff

RE: INTEGRATED CURRICULAR THEMES

As you know, during the 1992-93 academic school year, Franklin's instructional and allied arts teams have been involved with planning and teaching integrated units. Inservices, this year, have dealt with integration topics and concerns. In an effort to continue along these lines for the 1993-94 school year, you will find an attached survey that refers to current attitudinal and knowledge bases of colleagues at Franklin.

Could you please take ten minutes to fill out the survey so that we know where inservicing needs may lie for next year. Please return the surveys to the "Curriculum Integration Survey Box" that is located on the counter in the main office by Friday, June 4, 1993.

Thank you for your effort, and I am looking forward to working with you again next year.

Judy Schmitz:sja
currthem.mem

attachments

cc: Jeanine Allen

FRANKLIN MIDDLE SCHOOL CURRICULUM INTEGRATION SURVEY

	Rate on Scale of 1 (Low) to 5 (High)				
	Strongly Disagree	*Disagree*	*Neither Agree/ Disagree*	*Agree*	*Strongly Agree*
	1	*2*	*3*	*4*	*5*
ADMINISTRATION					
(1) The administration in this school often talk with teachers in regard to curriculum integration.	1	2	3	4	5
(2) The administrators in this school talk with parents about integrating curriculum.	1	2	3	4	5
(3) The administrators set high standards and good examples for teachers and students concerning rationale and time for planning curriculum integrated.	1	2	3	4	5
(4) The administrators listen to ideas from teachers and students on curricular themes.	1	2	3	4	5
STUDENT ACADEMIC VALUES					
(5) Students are interested in learning through methods such as lectures and taking notes.	1	2	3	4	5
(6) Students are interested in learning through hands-on experiences and small group projects.	1	2	3	4	5
(7) Students in this school want to have fun while learning and working on assignments.	1	2	3	4	5
(8) Students work to the same degree of effort on interdisciplinary and departmentalized curriculum.	1	2	3	4	5
STUDENT BEHAVIOR VALUES					
(9) Students in this school behave well during class time.	1	2	3	4	5
(10) Students work hard on assignments, even when teachers do not interact with them.	1	2	3	4	5
(11) Students in this school appreciate each other and are considerate of one another.	1	2	3	4	5
(12) Students enjoy learning in their classes and like their teachers.	1	2	3	4	5

	Rate on Scale of 1 (Low) to 5 (High)				
	Strongly Disagree	*Disagree*	*Neither Agree/ Disagree*	*Agree*	*Strongly Agree*
	1	*2*	*3*	*4*	*5*
TEACHER-STUDENT RELATIONSHIPS					
(13) Teachers in this school enjoy their work and like their students.	1	2	3	4	5
(14) Teachers teach to the various learning styles of their students.	1	2	3	4	5
(15) Teachers treat each student as an individual.	1	2	3	4	5
(16) Teachers consistently praise and are fair to their students.	1	2	3	4	5
TEACHER KNOWLEDGE BASE OF LEARNING THEORIES (Think of the faculty as a whole)					
(17) Teachers in this school are knowledgeable about the rationale of integrating curriculum.	1	2	3	4	5
(18) Teachers are knowledgeable about cognitively guided instructional strategies (or brain-based learning theories) and how they relate to integrated curriculum.	1	2	3	4	5
(19) Teachers are knowledgeable about reciprocal teaching methods, guided cooperative learning techniques which improve comprehension.	1	2	3	4	5
(20) Teachers are knowledgeable about social constructivism, strategies that connect the known to new learning.	1	2	3	4	5
(21) Teachers are knowledgeable about technique of "scaffolding", the use of temporary prompts.	1	2	3	4	5
(22) Teachers in this school would be interested in being trained in cognitively guided instructional strategies.	1	2	3	4	5
(23) Teachers would be interested in learning how cognitive instruction relates to curriculum integration.	1	2	3	4	5
(24) Teachers would be interested in Bernice McCarthy's 4-Mat training.	1	2	3	4	5

COMMENTS:

Appendix C

Curriculum Integration Activities for "Life in a Space Colony"

Activities

1. *Learning Logs*

Learning logs provide a valuable writing-to-learn strategy. Learning logs can promote reflective thinking with appropriate teacher guidance about the content being learned. This strategy serves to place students at the center of their own learning as they use writing to make connections about new information and ideas presented. Thus use of learning logs should begin with the introduction of the unit and used in conjunction with all other learning activities. The following directions may help students get started:

The kind of writing that you will do in your learning log is meant to help you think about what you are reading and learning. Therefore feel free to:

- Give your personal reaction to the information, ideas, events, methods, characters, and situations presented in your readings or in class.
- Summarize what YOU believe are the most important ideas.
- Give an example from your own experience that relates to what you are learning.
- Discuss the connections you see between the various ideas presented.
- Write questions about what you don't understand (i.e., what isn't clear).
- Present an argument about some point or points with which you disagree.

Information gathering and developing a point of view. To make reasoned decisions about the kind of governance they wish to adopt for their space colony, students need to understand the concept of government, different systems of social organization and governance, and the implications of different forms of governance for individuals. The following three activities promote important concepts about government. They are designed to promote higher level thinking skills (analysis, synthesis, and evaluation) and involve students in research, expository writing, and art:

2. *Multiple Sources of Information*

Students will use multiple sources of information to compare and contrast three different forms of governance (e.g., democracy, dictatorship, monarchy) with respect to (a) the seat of power; (b) underlying philosophy, values, and traditions; (c) the processes used for maintaining social control; and (d) the relative power of individuals. Students will organize the information and present it in the form of a chart.

3. *Biographies*

Students will write a biographical sketch for each of three hypothetical characters, each living under a different system of government. Each sketch will include a description of the character's home life, education, type of employment, economic status, various freedoms and restrictions and an explanation suggesting the links between government policies and specific aspects of each character's life style.

4. *Art*

Students will create a series of editorial cartoons depicting their perceptions of the positive or negative aspects of various governmental policies. Students explain or defend their stance by writing an editorial to accompany each cartoon. Students are encouraged to share their cartoons and views with others, examining similarities and differences in perspectives.

5. *Developing a Constitution for Government*

This activity emphasizes analysis, synthesis, evaluation, interviewing skills, and expository writing. Students will create their own constitution by which to govern their space colony using appropriate books and documents for reference, as well as information obtained through interviews of appropriate individuals (e.g., legislators, attorneys, professors of law).

6. *Literature and Creative Expression*

Students select a science fiction story which focuses on the issue of governance (e.g., Monica Hughes, *The Guardian of Isis*, Atheneum, 1984). Students in small groups transform a specific episode into a script which will later be presented in one of the following formats: a play, a radio script, a puppet show, or readers theater. Students are encouraged to select or create appropriate music to accompany their dramatizations.

7. *Creative Writing: Poetry*

Students will summarize their understandings about key concepts (e.g., freedom, government, democracy) and present their ideas in the form of an acrostic verse, where the letters of the subject (e.g., FREEDOM) are used as the first letter of each line of the poem. The lines may consist of single words, phrases, or complete sentences that reveal the author's perceptions of or reactions to the subject.

8. *Creative Writing: Science Fiction*

Students create an original story based on a similar theme after reading their choice of science fiction dealing with the issue of governance. Working in small cooperative learning groups, students critique each other's efforts, making recommendations for ways to improve the content, word choice, and the mechanics of what they have written. Final products may be compiled into a book for the class or school library.

Other strands of the web focusing on the various theme topics should provide additional opportunities for students to engage in oral and written language as well as critical and creative thinking. When the initial planning of the unit (i.e., the web) has been completed, it is ready to serve as a concise summary for more in-depth planning. In evaluating the unit, teachers should ask themselves the following questions:

- Are opportunities provided for students to engage in a variety of activities within each of the language modes (listening, speaking, reading, and writing)?
- Are opportunities provided for creative expression?
- Are multiple disciplines included in the unit of study?
- Are provisions made to emphasize the connections between major ideas and concepts within and between various disciplines?
- Are the activities likely to el higher level thinking? To what ext do they encourage the developm of creative products?
- Are opportunities provided for development of research and stu skills?
- Are opportunities provided for soc interaction as well as for indepe ent, self-directed work?

The checklist could also be adapted use by students to facilitate th evaluation of the unit as well as quality of their own participation.

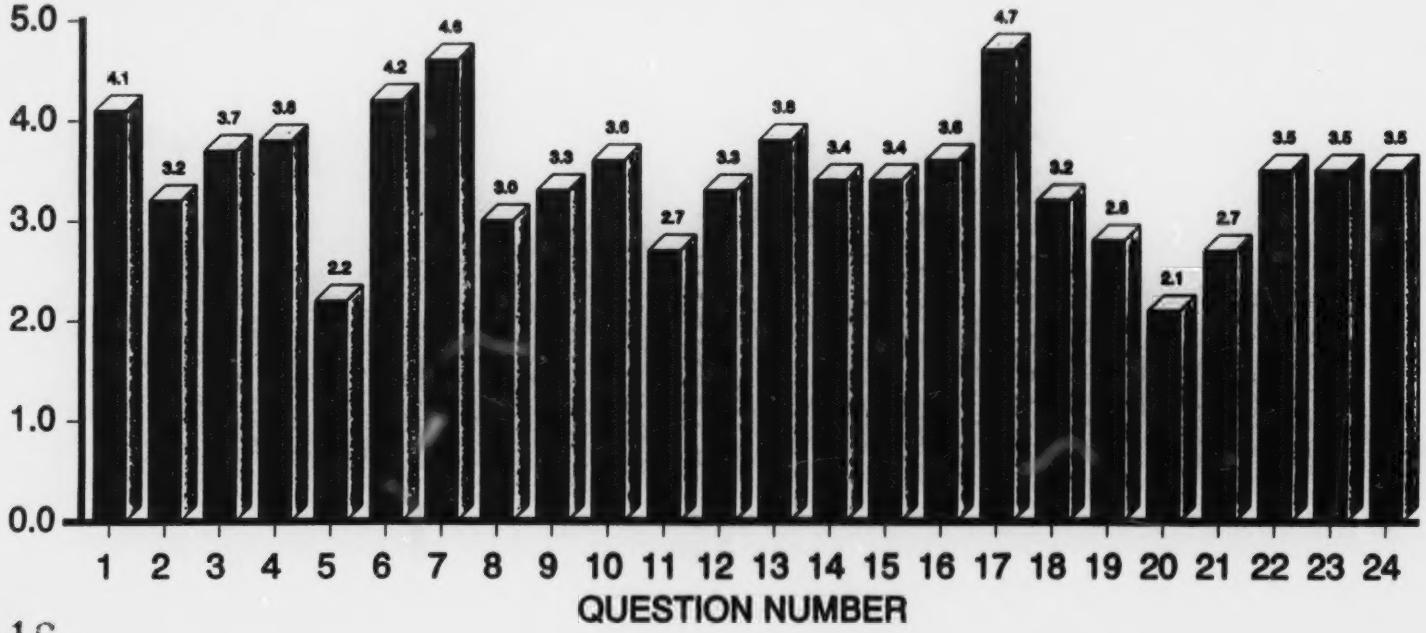
Teachers create a learning envir ment which encourages inqu invention, personal choice, self directed learning as they deve programs which reflect the basic ten of constructivist theory. Students le how to think as well as how to use guage effectively to learn about the w as well as about themselves. This cor through experiences and activit which integrate language and think skills. Such a curricular structure consistent with the characteristic gifted learners.

Appendix D

Bar Graph Results
of the
Pre and Post Survey
on
Curriculum Integration

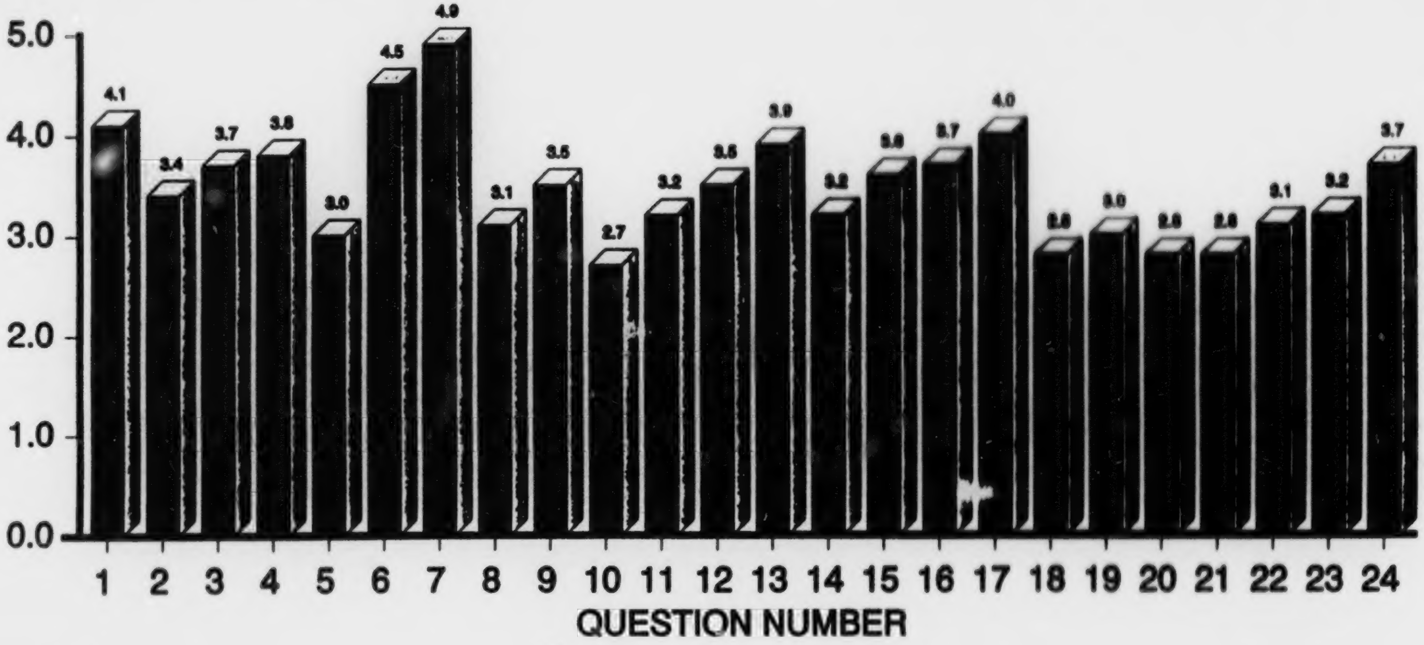
PRE-SURVEY RESULTS

RATING SCALE: 1 = Low to 5 = High



POST-SURVEY RESULTS

RATING SCALE: 1 = Low to 5 = High



Appendix E

Interview Guide
for
Key Informant Interviewing
with the
Middle School Principal

KEY INFORMANT INTERVIEW WITH THE MIDDLE SCHOOL PRINCIPAL

INTERVIEW GUIDE

1. Please comment on the 1993-94 building improvement plan and the continued efforts to improve the teaching of integrated and cross-curricular themes.
    a. What has your role been in increasing and enhancing the teaching of interdisciplinary units?
    b. What has your role been in the promotion and incorporation of cognitive instructional strategies into the teaching of cross-curricular thematic units?
2. How do you perceive teachers' attitudes about the inservice modules on brain-based learning theories (cognitively guided instructional strategies)?
3. What ideas do you have in regard to teacher-student relationships in your building?
    a. What evidence do you have that teachers are using cognitive strategies while they teach interdisciplinary units?
    b. How do teachers provide for individual learning styles?
4. How have student academic and behavior values improved since the incorporation of cognitive instruction into cross-curricular thematic teaching?
5. In what ways has the educational climate improved during the 1993-94 academic school year?
6. How knowledgeable do you feel teachers are in regard to the relationship of cognitive strategies to integrated curricular teaching?
    a. What has worked well with this practicum project on brain-based learning theories?
    b. What staff development needs are still evident?

Appendix F

Interview Guide
for
Middle Level Staff Members

INTERVIEW WITH SELECTED STAFF MEMBERS

INTERVIEW GUIDE

1. Please comment on your perception of the inservice modules on cognitively guided instructional strategies.
    a. What new teaching strategies did you gain?
    b. What concepts did you already have knowledge of, that perhaps, validated your repertoire of teaching styles?

2. How have you utilized cognitively guided strategies in your instruction of cross-curricular thematic units?

3. How do you feel cognitive instruction relates to curriculum integration?

4. Overall, what is your perception of teacher-student relationships in this building?

5. How do you feel educational climate has improved over the 1993-94 academic school year?

6. What has worked well for you in terms of incorporating cognitive strategies with the teaching of cross-curricular activities/units?

What suggestions do you have for improvement or enhancement of curriculum integration, the teaching of cognitively guided instructional strategies, or educational climate?

Appendix G

Module 1

Paradigm Shifts

PARADIGM SHIFT

	ATTITUDE	NEW IDEAS
P=	SURVIVAL	RECEPTIVE
	PRIORITIES	MODEL
	PHILOSOPHY	PROCESS

1950	1980-1993
JUNK	HIGH TECH
TACKY	QUALITY
PLASTIC	DURABLE
NOT DURABLE	ECONOMICAL
NOT RELIABLE	COMPETITION
PARTY FAVORS	WORK ETHICS
NOT PATRIOTIC	AMBIVALENT
LOW COST	UNFAIR TRADE
	GLOBAL EFFORT
	COOPERATION
	SHARING

BEYOND EFFECTIVE TEACHING

DISCUSSION QUESTIONS

1. Howard Gardner challenges educators to better ask the question, "How smart are you?" What is the significance of this statement?

2. What are some examples of "new" approaches for remedial instruction?

3. How can we teach "original" thinking?

4. How is the role of teaching changing for those who embrace new approaches to learning?

5. How can we **activate** parent power?

6. How well do we appreciate the "diversity" of students? In what ways?

7. What are the common denominators needed to reform our schools?

SHIFTS

PROCESS ORIENTED

QUALITY

ACTIVE LEARNING AND INQUIRY

TEACHER AS FACILITATOR

REAL LIFE SKILLS

HOW TO INVOLVE PARENTS

ACKNOWLEDGE ALL INTELLIGENCES

ALL CHILDREN CAN LEARN

COLLABORATIVE CURRICULUM

ALTERNATIVE WAYS

PERFORMANCE

APPENDIX H

Module 2

Process for "Students as Designers of Knowledge"

BEST COPY AVAILABLE

Evaluation of Research and Communication Skills

ASK

- * knows how to brainstorm
- * uses seed questions in brainstorming
- * categorizes questions
- * clarifies vague questions
- * justifies selection of questions in own words

PLAN

- * develops timeline for project tasks
- * divides work up among team members
- * meets deadlines
- * sketches preliminary plan for the presentation
- * develops plan for getting feedback

FIND

- * uses Table of Contents
- * uses Index
- * can access electronic search
- * uses keywords in electronic search
- * uses the card catalog

ADD

- * asks interview questions that are open-ended
- * structures interview to promote discourse
- * constructs questionnaire
- * takes notes
- * uses tape recorder or video for interview
- * summary expresses main ideas, leaves out details
- * explores alternative sources of information, like video

ANALYZE

- uses graphs to display information
- uses tables to display information
- uses Tabletop to explore data
- writes interpretations of data in own words

ORGANIZE

- uses webbing to map out ideas
- uses database to organize information
- develops adequate user's guide for hypermedia presentation
- uses reflection tools in HA when appropriate
- develops web or other sketch of the hypermedia document

DESIGN

- shows awareness of balance, form
- uses color and sound to represent an idea
- uses multiple representations (text, picture, etc.) for the same idea
- justifies choice of representation
- links multiple representations of the same idea
- develops a web for the presentation
- connects topics

PRESENT

- maintains eye contact
- speaks in an adequate voice
- asks for questions from the audience
- answers at least five research questions
- coordinates presentation with·other members of the design team
- answers questions from audience
- presents in own words
- develops a major theme
- attempts to get audience interested in topic

REFLECT

- gets feedback from classmates
- gets feedback from teachers
- offers constructive feedback to classmates
- participates in class discussion
- gets feedback from classmates more than once

REVISE

- uses suggestions to edit (spelling, etc.) the presentation
- uses suggestions to revise the presentation (change meaning)
- uses suggestions to think about an idea in new ways
- provides suggestions that others use in their presentations

COMPUTER TOOLS

- opens the HA application
- creates a new card
- creates text
- creates or imports a graphic
- creates or imports sound
- links cards
- creates an animation
- uses point-of-view map
- uses scoping map
- creates a user's guide
- uses SoundEdit to edit a sound

Appendix I

Module 5

Elaboration and Scaffolding

THINKING JOURNAL

Name ______________________________

Class/Grade ______________________________

Date ______________________________

Contents

I. Problem Solving (Respond to these questions weekly.)
  A. What was the problem I had to solve?
  B. How did I solve it? (Identify thinking strategies, not solutions.)
  C. Did I solve it? Well?
  D. What would I do differently next time? Why? What did I learn about my problem-solving abilities?
  E. What other kinds of problems (in school and everyday kinds) could I solve using these strategies? Where else are the strategies applicable?

II. Problem Finding
  A. Identify a problem/dilemma/conflict of interest to you. It might be a situation outside of school if you wish.
  B. What questions do you have about this situation? Generate as many different kinds of questions about the situation as you can. Every week look over the list of questions posed last week, and see how many more you can generate.
  C. How can strategies learned in class help you solve this problem, resolve the conflict or dilemma?
  D. What are you learning about responding to real-life situations as a result of recording your thinking processes in this journal?

(Barell, Liebmann, & Sigel, 1988, p.15)

READY READING REFERENCE BOOKMARK

When you read -
Tell
yourself what the
author says.
Ask
yourself if what you are
reading makes sense.
Picture
what the author describes.
Identify
the main ideas.
Predict
what will come next.

If you don't understand -
Identify
the problem.
Remind
youself of what you want
to find out.
Look Back.
Look Ahead.
Slow Down.
Ask
for help.

After you read -
Retell
what you read in your own
words.
Summarize
the most important ideas.
Ask
yourself questions and
answer them.
Picture
in your mind what the
author described.
Decide
what was especially
interesting or enjoyable.

PROBLEM-SOLVING STRATEGIES

1 Read the problem carefully. Re-read it if necessary.

2 Determine the meaning of key words or special terms.

3 State the goal in your own words.

4 List the important information.

5 Draw a picture or diagram of the problem.

6 Look for patterns.

7 Break the problem into smaller pieces.

8 Recall similar problems and recall how they were solved.

9 Use systematic trial and error (guess and check).

10 Work backwards from the final result.

11 Be flexible. Try different approaches.

12 Match your solution with the original goal. Does it make sense? Is it accurate?

(McTighe & Lyman, 1988, p.22)

CUEING BOOKMARK

Front

QUESTIONING FOR QUALITY THINKING

Knowledge--Identification and recall information
Who, what, when, where, how ____________________?
Describe ____.

Comprehension--Organization and selection of facts and ideas
Retell __________________ in your own words.
What is the main idea of __________________________.

Application--Use of facts, rules, principles
How is ____________ an example of _____________?
How is ____________ related to _______________?
Why is ________________ significant?

Analysis--Separation of a whole into component parts
What are the parts or features of ____________?
Classify ____________ according to ________.
Outline/diagram/web ____________________.
How does ___________ compare/contrast with _______?
What evidence can you list for _______________?

Synthesis--Combination of ideas to form a new whole
What would you predict/infer from _____________?
What ideas can you add to ________________?
How would you create/design a new _____________?
What might happen if you combined _______________ with ________________?
What solutions would you suggest for _____________?

Evaluation--Development of opinions, judgments, or decisions
Do you agree ___________________?
What do you think about _________________?
What is the most important _________________?
Prioritize ____________________.
How would you decide about _______________?
What criteria would you use to assess _____________?

Back

STRATEGIES TO EXTEND STUDENT THINKING

- **Remember "wait time I and II"**
  Provide at least three seconds of thinking time after a question and after a response
- **Utilize "think-pair-share"**
  Allow individual thinking time, discussion with a partner, and then open up the class discussion
- Ask **"follow-ups"**
  Why? Do you agree? Can you elaborate? Tell me more. Can you give an example?
- **Withhold judgment**
  Respond to student answers in a non-evaluative fashion
- Ask for **summary (to promote active listening)**
  "Could you please summarize John's point?"
- Survey **the class**
  "How many people agree with the author's point of view?" ("thumbs up, thumbs down")
- Allow **for student calling**
  "Richard, will you please call on someone else to respond?"
- Play **devil's advocate**
  Require students to defend their reasoning against different points of view
- Ask **students to "unpack their thinking"**
  "Describe how you arrived at your answer." ("think aloud")
- **Call on students randomly**
  Not just those with raised hands
- **Student questioning**
  Let the students develop their own questions
- **Cue student responses**
  "There is not a single correct answer for this question. I want you to consider alternatives."

(McTighe & Lyman, 1988, p.21)

Appendix J

Module 6

Reciprocal Teaching

RECIPROCAL TEACHING PLAN

Title of Unit: ______________________________

1. What is one objective in the unit? (that could be taught through reciprocal teaching) It could be a broad goal as well.

2. When you introduce reciprocal teaching to your students, how will you explain it? (Anticipatory Set)

3. What will be the focus question and the text or content?

4. How will you describe and model reciprocal teaching to your students? Who would be a good student to work with you as a dialogue leader?

   a. What kinds of higher level questions can be asked about the content? (Teacher and students ask questions)

The dialogue leader can begin the discussion by asking a question on the main content and ends by summarizing the gist.

   b. How will you review content? (Summarize)

If there is a disagreement among students about the main summarization, the group rereads and discusses potential question and summary statements until they reach consensus.

Summarizing provides a means by which the group can monitor its progress, noting points of agreement and disagreement. Particularly valuable is the fact that summarizing at the end of a period of discussion helps students establish where they are in preparation for tackling a new segment of text.

   c. How can you attempt to resolve misunderstandings? (Clarify)

Attempts to clarify any comprehension problems that might arise are also an integral part of the discussions.

   d. What can you do to get students to make predictions about future content?

Throughout, the adult teacher provides guidance and feedback tailored to the needs of the current discussion leader and his/her respondents.

Appendix K

Module 7

Guided Cooperative Teaching

YOUTH VIOLENCE

Is it a fluke that on one recent day in Washington, D.C., students at two different high schools opened fire on their fellow students? Had the two shootings happened a decade ago, they might have seemed an unnerving coincidence. Today, however, they are signs of the times. Youth violence has reached such a point in this country that it is no longer attributed to chance when, within hours of each other, kids at two separate schools in the same city opt to whip out guns to settle their differences.

No one was injured in the Washington shootings, which were triggered by the sorts of situations all adolescents face. In one case, the provocation reportedly was a quarrel over a girl; in the other, it was a dispute over someone's jacket. The very banality of the stories begs the question, Why?

> Excerpt taken from an article in the March, 1994, issue of The American School Board Journal, titled "Roots of Violence," written by Jo Anna Natale, senior editor.

PIT VIPERS

The water moccasin, somewhat longer than the copperhead, is found in the southeastern states. It lives in swampy regions. It belongs, as do also the copperhead and the rattlesnakes, to a group of poisonous snakes called pit vipers. They have pits between their eyes and their nostrils which, because they are sensitive to heat, help the snakes tell when they are near a warm-blooded animal. Another name for the water moccasin is "cottonmouth." This name comes from the white lining of the snake's mouth.

> Excerpt taken from a book titled, Knowing, Learning, and Instruction, edited by Lauren B. Resnick, 1989, Lawrence Erlbaum Associates, Hillsdale, N.J.

Appendix L

Module 9

Implementation of Collaborative Problem Solving

Tools for Teaching Diverse Learners

The BIG Accommodation Program

Douglas Carnine

"Tools for Teaching Diverse Learners" is a series of columns that looks at strategies that foster the academic growth of students with widely different performance levels. This month's topic is "big ideas."

Big ideas—powerful, generative educational principles and concepts—are receiving a great deal of [redacted] in the new curriculum standards for almost every discipline. But what is not being addressed is how the growing number of [redacted] best learn the big ideas. On our way to [redacted] standards, how will we accommodate the 1 out of 10 students who receives [redacted] service, the 2 out of 10 who live in [redacted], the 1 out of 7 who lives in [redacted] speaking households (Barringer 1992)?

The instructional approach most commonly associated with world-class standards is [redacted], but while inquiry is a useful instructional approach, diverse learners often benefit from a [redacted] of approaches in meeting their [redacted] needs (Carnine and Kameenui 1992). One such alternative is the BIG Accommodation program for middle school students.

BIG accommodates a [redacted] range of diverse learners than is typically the case. Many of the mathematics and science videodisc courses used in BIG have been deemed [redacted] by the U.S. Department of Education's Program Effectiveness Panel (PEP). Pogrow also cited the BIG mathematics courses for excellence (1993). Two of the more interesting findings from the studies included in the submission to the PEP panel were that 8th graders who had participated in the videodisc science course and supplemental problem-solving instruction scored [redacted] on a test of problem solving in earth science as [redacted] science majors. In another study, [redacted] high school students scored as well as second-year AP chemistry students on a test of applications of core concepts in chemistry (Hofmeister 1992).

Seeing the BIG Picture

The BIG program is composed of three central [redacted]—*B*ig ideas from the content areas, *I*ntensive instruction, and *G*reat expectations. BIG stresses that while inquiry and child-directed learning are important, teachers can teach diverse learners more efficiently by [redacted] the application of knowledge.

[redacted] learning is only one aspect of BIG, however. At the [redacted] of this program, teachers help students make [redacted] among big ideas, use them in problem solving, and write about them. With [redacted] instruction around these applications, diverse learners [redacted] knowledge and [redacted] their understanding.

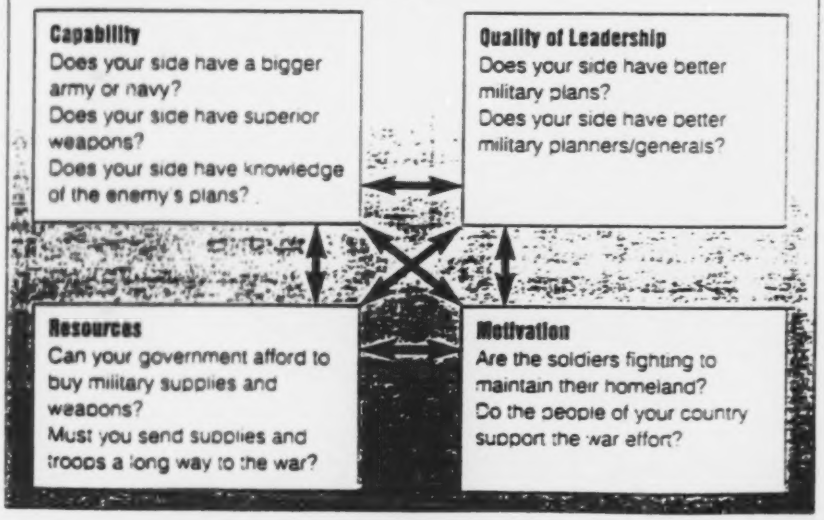
How BIG Works

The best way to explain BIG is through examples. In history, students might be introduced to the "big idea" of leadership, for instance. By examining the [redacted] of leadership, they can deepen their understanding of the qualifications, knowledge, and effectiveness of leaders like Jefferson, Washington, and Lincoln. But such study can be inadequate when the context is too [redacted] General Robert E. Lee was a great leader, yet a losing general. So, students can go on to learn that the success or failure of a

Figure 1

A Concept Model

The Four Factors of Group Success Applied to War



Capability
Does your side have a bigger army or navy?
Does your side have superior weapons?
Does your side have knowledge of the enemy's plans?

Quality of Leadership
Does your side have better military plans?
Does your side have better military planners/generals?

Resources
Can your government afford to buy military supplies and weapons?
Must you send supplies and troops a long way to the war?

Motivation
Are the soldiers fighting to maintain their homeland?
Do the people of your country support the war effort?

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[redacted] depends on more than leadership: the motivation, capability, and resources available to a group are important factors as well.

These four "big ideas" might in turn be applied to situations in which a group is [redacted] against the elements (for example, the settlement of Jamestown): attempts to dominate other groups (the formation of parties in the United States); and [redacted] for human rights (the Civil Rights Movement).

From Direct Instruction to Concept Models

Intensive instruction around big ideas starts in science with videodisc lessons. In history it starts with a text written in a clear fashion with interspersed questions that help diverse learners attend to the big ideas and their component concepts. Big ideas are also graphically represented as concept [redacted], the first being one that frames history as the study of how groups of people have succeeded and failed in solving problems. (See fig. 1 for an example of a concept model.)

Initially, teachers might ask students to fill in the words for a blank concept model. By using these decontextualized exercises, which they might repeat several times, teachers can impress on [redacted] learners a big idea's component concepts and their interrelationships.

Applying big ideas is a much more [redacted] form of review than filling in concept models, however. For example, students studying the French and Indian Wars might be asked to look at the actions of William Pitt and consider which combination of the factors (big ideas) contributed to British victory. This type of application deepens students' [redacted] of big ideas.

Great Expectations

The BIG Accommodation Program does not result in all students writing [redacted] essays about current events using primary source documents. The writings of students with [redacted] will still have more [redacted] errors and tend to be less complete and less [redacted].

At the core of this program, teachers help students make connections among big ideas, use them in problem solving, and write about them.

The intent of BIG is not to make all students the same, but a key finding is that the writing of the students with disabilities in BIG programs is usually coherent, deals with [redacted] relationships, and illustrates that students [redacted] facts reasonably well (Kameenui and Carnine, in press). This level of [redacted] on such a challenging task proves that the great expectations of BIG are not just a hollow slogan. In fact, great expectations with BIG are thoroughly justified. ■

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Douglas Carnine is Director of the National Center to Improve the Tools of Educators, 805 Lincoln, University of Oregon, Eugene OR 97401.

COLLABORATIVE PROBLEM SOLVING

1. Students are presented with two approaches and are asked to vote on which of the two students could do better on a test based on how each read her science assignment.

   SARA
   read the chapter in sections,
   asked herself questions about what she had read,
   made sure that she could answer her own questions, and
   made sure she could answer the questions at the end of the chapter.

   If she had trouble with any question, she reread that portion of the chapter.

   SUSAN
   read the chapter through to the end,
   read the chapter again.

2. Class voted - Sara received three votes; Susan received four.

3. Label the strategies of both students.

4. Evaluate the pros and cons of both strategies through class discussion.

5. Is there any other information that would help the discussion?

6. Revote as necessary.

Appendix M

Module 10

Understanding the Theory of Multiple Intelligences

SELF-REPORT CARD

An activity to learn about self, others, and multiple intelligences

1. Put you name in the middle of a sheet of paper.
2. Top Right Corner - What is your favorite kind of music or a favorite song?
3. Bottom Right Corner - What do you do to relax?
4. Bottom Left Corner - On a scale of 1-10 with 10 being high, how do you rate yourself when it comes to working with numbers, like balancing your checkbook?
5. Top Left Corner - What is a topic you have recently read about or what is a book/novel you have recently read?
6. Top Middle - How do you feel at this very moment? Draw a symbol or sketch that illustrates this feeling.
7. Bottom Middle - What is an activity you engage in for socialization purposes?

*** Share your report card with as many people as you can in 5 minutes.

Logical/Mathematical Intelligence

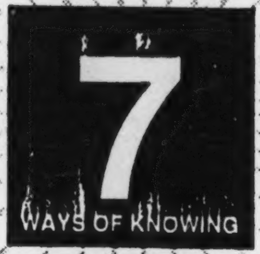
Often called "scientific thinking" this intelligence deals with deductive thinking/reasoning, numbers and the recognition of abstract patterns.

Verbal/Linguistic Intelligence

Related to words and language, both written and spoken. This form of intelligence dominates most Western educational systems.

Visual/Spatial Intelligence

The intelligence which relies on the sense of sight and being able to visualize an object and the ability to create internal mental images/pictures.



MULTIPLE INTELLIGENCE

Intrapersonal Intelligence

The intelligence which relates to inner states of being, self-reflection, metacognition (i.e. thinking about thinking) and awareness of spritual realities.

Body/Kinesthetic Intelligence

Related to physical movement and the knowings/wisdom of the body, including the brain's motor cortex which controls bodily motion.

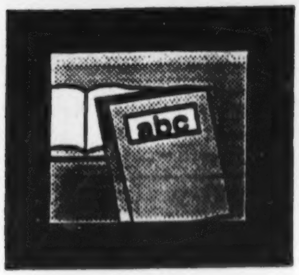
Interpersonal Intelligence

The intelligence which operates primarily through person-to-person relationships and communication. It relies on all the other intelligences.

Musical/Rhythmic Intelligence

The intelligence which is based on the recognition of tonal patterns, including various environmental sounds and on a sensitivity to rhythm and beats.

MULTIPLE INTELLIGENCES OVERVIEW

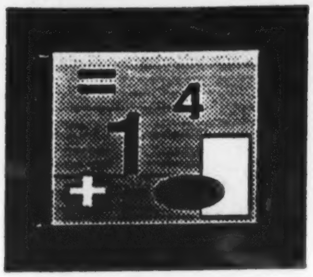


VERBAL/ LINGUISTIC INTELLIGENCE

Verbal/linguistic intelligence is responsible for the production of language and all the complex possibilities that follow, including poetry, humor, storytelling, grammar, metaphors, similes, abstract reasoning, symbolic thinking, conceptual patterning, and of course, the written word. Verbal/linguistic intelligence is awakened by the spoken word; by reading someone's ideas or poetry; and by writing one's own ideas, thoughts, or poetry.

To activate this intelligence:

- Read a story you enjoy and write your own sequel—"What happens next?"
- Listen to someone expound on their ideas and have a discussion with them.
- Learn the meaning of one interesting, new word each day and practice using it.
- Make a speech on a topic about which you have a great deal of interest and excitement.
- Keep a journal or log in which you write your reflections about events from the day.



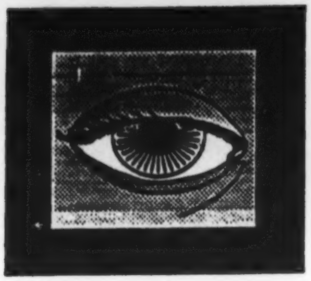
LOGICAL/ MATHEMATICAL INTELLIGENCE

Logical/mathematical intelligence is most often associated with what we call "scientific thinking." Logical/mathematical intelligence is activated in situations requiring problem-solving or meeting a new challenge. This intelligence likewise involves the capacity to recognize patterns, to work with abstract symbols such as numbers and geometric shapes, and to discern relationships and/or see connections between separate and distinct pieces of information.

To activate this intelligence:

- Create a four-point outline on your hobby with each point having four subpoints, and each subpoint having four more subpoints.
- Practice analytical thinking by comparing and contrasting two objects; for example, five unique characteristics of a typewriter, for of a computer, and five the two objects have in common.
- Create a convincing, rational explanation for something that is totally absurd; for example, the benefits of the square basketball.
- Participate in a project requiring the use of the "scientific method." If you are *not* a cook, try making brownies from scratch following a recipe.

Verbal/linguistic and logical/mathematical intelligence form the basis for all current intelligence tests, standardized achievement tests, and college entrance examinations used in Western systems of education.

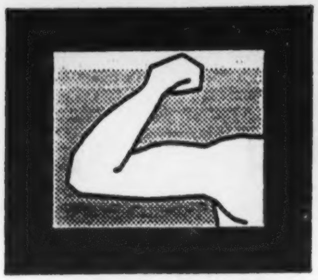


VISUAL/ SPATIAL INTELLIGENCE

Visual/spatial intelligence deals with such things as the visual arts (including painting, drawing, and sculpture); navigation, map-making and architecture (which involve the use of space and knowing how to get around in it); and games such as chess (which requires the ability to visualize objects from different perspectives and angles). The key sensory base of this intelligence, obviously, is the sense of sight, but also the ability to form images and pictures in the mind. Our childhood day-dreaming, when we pretended we could fly or that we were magical beings, or maybe that we were heroes/heroines in fabulous adventure stories used this intelligence to the hilt!

To catalyze your visual/spatial intelligence:

- Work with "artistic media" (such as clay, paints, colored markers, and pens) to express an idea or opinion; for example, what you think the 21st Century will be like.
- Do intentional day-dreaming; for example, for example, dream about the ideal vacation spot with as much visual detail as you can muster.
- Practice internal imagination exercises—visualize yourself in a different period of history or have an imaginary conversation with your hero/heroine, a character from literature, or an historical figure.
- Use various "design skills" such as drawing, architecture, diagrams, or creating a poster to convey your ideas or thoughts to others.

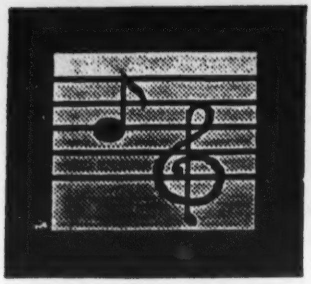


BODY/ KINESTHETIC INTELLIGENCE

Body/kinesthetic intelligence is the ability to use the body to express emotions and ideas (as in dance and body language), to play a game (as in sports), or to create a new product (as in devising an invention). Learning by doing has long been recognized as an important part of education. Our bodies are very wise. They know things our conscious minds don't and can't know in any other way. For example, if I gave you a piece of paper and asked you to lay out the keyboard of the typewriter without moving your fingers, could you do it? Probably not. But you fingers know the keyboard without even pausing.

To call this intelligence to the fore:

- Perform a dramatic enactment; "role play" an idea, opinion, or feeling. Play charades using current events or modern inventions.
- Play non-competitive games that involve physical activity and a lot of motion; for example, learn the names of everyone in the room through physical gestures.
- Practice activities that require physical activity such as folk dancing, jogging, swimming, and walking. Try walking in different ways to match or change your mood.
- Carefully observe yourself involved in everyday physical tasks such as shoveling snow, mowing grass, washing dishes, or fixing your car to become more aware of what you body knows and how it functions.

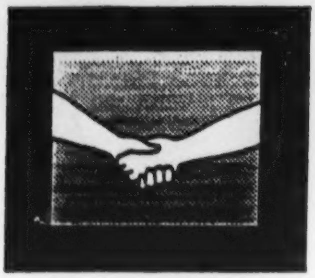


MUSICAL/ RHYTHMIC INTELLIGENCE

This intelligence includes such capacities as the recognition and use of rhythmic and tonal patterns, and sensitivity to sounds from the environment, the human voice, and musical instruments. Many of us learned the alphabet through this intelligence and the "A-B-C song." Of all forms of intelligence identified thus far, the "consciousness altering" effect of music and rhythm on the brain is the greatest. Just think of how music can calm you when you are stressed, stimulate you when you're bored, and help you attain a steady rhythm in such things as typing and exercising. It has been used to inspire our religious beliefs, intensify national loyalties, and to express great loss or intense joy.

To activate your musical/rhythmic knowing:

- Listen to different kinds of music to shift you mood; for example, play relaxing, instrumental music before or during a stressful, anxiety-producing activity (such as taking a test).
- Use singing to express an idea (even in the shower!). Use a popular tune and create a simple song about your family.
- Hum to create different kinds of vibrations inside of your head; for example, try the vowels one at a time, using different volumes and pitches.
- Play tapes of various sounds from nature (such as the ocean tides, a water fall, wind gusts, and animal sounds). Ask yourself what you can learn from the rhythms and patterns of nature.

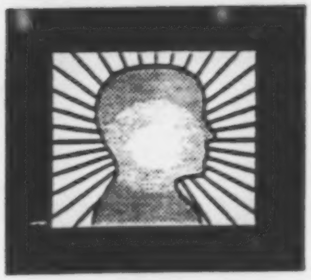


INTERPERSONAL INTELLIGENCE

Interpersonal intelligence involves the ability to work cooperatively in a group as well as the ability to communicate, verbally and non-verbally, with other people. It builds on the capacity to notice distinctions among others; for example, contrasts in moods, temperament, motivations, and intentions. In the more advanced forms of this intelligence one can "pass over" into another person's life context (that is, "stand in their shoes", so to speak) and read their intentions and desires. One can develp genuine empathy for another's feelings, fears, anticipations, and beliefs.

To awaken this intelligence:

- Get into different structured situations in which reliance on other people is required for successfully completion of a project (such as any kind of team activity or committee work).
- Practice listening deeply and fully to another person. Cut off the "mind chatter" that usually occurs when you are listening to someone else talk, and stay focused only on what they are saying.
- Try to guess what someone else is thinking or feeling based on various non-verbal clues, then check you accuracy with that person.
- Explore different ways to communicate with someone else; for example, facial expressions, body posture, gestures, sounds (including but not limited to spoken words).



INTRAPERSONAL INTELLIGENCE

Intrapersonal intelligence involves knowledge of the internal aspects of the self such as knowledge of feelings, the range of emotional responses, thinking processes (metacognition), self-reflection, and a sense of or intuition about spiritual realities. Intrapersonal intelligence allows us to be conscious of our consciousness; that is, to step back from ourselves and watch ourselves as an outside observer does. Our self-identity and the ability to transcend the self are part of the functioning of intrapersonal intelligence. It likewise involves our capacity to experience wholeness and unity, to discern patterns of our connection with the larger order of things, to perceive higher states of consciousness, to experience the lure of the future, and to dream of and actualize heretofore unrealized potentials in our lives.

To activate intrapersonal intelligence:

- In the midst of a routine activity practice acute mindfulness; that is, an intense awareness of everything going on, thoughts, feelings, physical movements, and inner states of being.

- Practice watching your thoughts, feelings and moods as if you were a detached, outside observer. Notice patterns that kick into gear in certain situations; for example, the "anger pattern," the "playfulness pattern," or the "anxiety pattern."

- Objectify your various thinking strategies and patterns, such as you problem-solving strategies, your crisis-thinking modalities, and your processes for analytical thinking.

- In 25 words or fewer write your answer today for the question "Who am I?" Keep working on it until you are satisfied. Look at it again each day for a week, making revisions that you feel are needed.

Appendix N

Module 11

Awakening and Practicing Multiple Intelligences

NOTES ON LEFT BRAIN/RIGHT BRAIN

Probably the most popular and widely known finding of contemporary brain research is that our brains have at least two very different ways of processing information. These are connected with the two hemispheres of the brain—the left and the right. One or the other of these sides tends to be dominant in each of us.

The **left brain's** processing is more analytical, linear, and step-by-step: for example, your left brain is active when you're trying to figure out what happened to all your money as you balance your checkbook! The left brain's information processing mode is more verbal, rational, and logical than the right.

The left brain tends to organize new information into pre-existing knowledge patterns, categories, and schemes. This is like a very meticulous person who is forever looking for little boxes on shelves to put things into so they'll make sense and the house will be neat and tidy.

The **right brain's** processing tends to be more integrating, simultaneous, and all-at-once: for example, your right brain reacts when one of your favorite songs plays on the radio, or you are looking at a magazine and suddenly turn the page to a picture of your ideal vacation spot! The right brain is more visual, spatial, symbolic, and aesthetic in the way it processes information.

The right brain can create leaps in knowing, for its vision is panoramic; it can see the larger patterns of things. It can invent ideas that don't fit into any pre-existing pattern or scheme and for which there is not even any previous reference point or experience. This is much like the artist or science fiction writer who creates worlds and universes no one has ever seen but in their dreams, or the musician who evokes deep emotions by putting together various musical tones and patterns.

An edge in current "split brain" research is the integration of the two sides of the brain into a unified whole—**the whole brain.** When this balancing occurs, we begin to participate in a greatly amplified approach to living. For in addition to so-called "hardheaded," rational thinking about our problems and concerns, the realm of intuition, symbols, and the aesthetic joins with our more analytical skills, giving us a deeper, richer experience of being.

SKYLIGHT PUBLISHING

PERSONAL REFLECTION

Learnings	Questions
1. Different people learn in different ways.	1. Given the seven ways of knowing, how should teaching proceed?
2. All people can be taught in different ways.	2. How do we get everyone in the schools and society to accept changing curriculum?
3. The theory of multiple intelligences provides a variety of teaching and learning choices.	3. Is the current physical set-up of the school conducive to small-group and interactive learning?
4. Gardner's ideas on multiple intelligences are very theoretical.	4. What does curriculum restructuring involve?
5. These sessions provided a good review of left-brain and right-brain styles.	
6. Participants became aware of different terminology; that is, brain research, hemisphericity, split brain.	
7. The verbal/linguistic and mathematical/logical modes are the easiest to teach.	
8. Teachers need to keep multi-modalities in mind when designing lessons. Styles of teaching must change.	
9. Using Multiple Intelligences in the classroom should promote lifelong learning.	

Appendix O

1993-94 Academic School Year
Integrated Curriculum Units
taught at
Franklin Middle School

FRANKLIN MIDDLE SCHOOL

Integrated Instruction

Grade 6 House A

List the eight integrated learning activities your team has been involved with. Also, indicate the type (Fogarty) model that was used and when you taught, or plan to teach the unit. Please star the activity that was connected with an Allied Arts Department or class. Please return to Diane Wesner by April 19, 1994.

	Title	Type Model	Date Implemented
1.	Monsters, Mummies, and Magic	4-Mat	October
2.	Pilgrims, Pumpkins, and Perseverance	Webbed	November
3.	The Ghost Mobile	4-Mat	October
4.	Understanding Japanese Culture	Shared	January
5.	The Greek Culture	Webbed	February
6.	Kiwanis Pond	Integrated	November-March
7.	Environmental Education	Integrated	April-May
8.	The Middle Ages	Sequenced	March-April

FRANKLIN MIDDLE SCHOOL

Integrated Instruction

Grade 6

House B

List the eight integrated learning activities your team has been involved with. Also, indicate the type (Fogarty) model that was used and when you taught, or plan to teach the unit. Please star the activity that was connected with an Allied Arts Department or class. Please return to Diane Wesner by April 19, 1994.

	Title	Type Model	Date Implemented
1.	Spelling	Integrated	Ongoing
2.	Relationships	Webbed	12/6 - 12/10
3.	Halloween	Webbed	10/27
4.	Egypt	Threaded	10/25 - 11/8
5.	Camp McLean	Integrated	5/16 - 5/18
6.	Flight	Shared	Done at different times. Science portion had to be done first. Math will be May 2.
7.	Baseball	Webbed	5/23 - 5/27
8.	Economics	Integrated	4/11 - ?

FRANKLIN MIDDLE SCHOOL

Integrated Instruction

Grade 7

House A & B

List the eight integrated learning activities your team has been involved with. Also, indicate the type (Fogarty) model that was used and when you taught, or plan to teach the unit. Please star the activity that was connected with an Allied Arts Department or class. Please return to Diane Wesner by April 19, 1994.

	Title	Type Model	Date Implemented
1.	Notetaking (All)	Threaded	1st Quarter (continued throughout year)
2. *	Measurement--Math, Science, Soc. Studies, Art, FACE, Tech Ed	Threaded	1st Quarter (ongoing)
3. *	Edmund Fitzgerald--All academic, music	Webbed	2nd Quarter
4.	Elections--Soc. Studies, Math, Language Arts	Shared	2nd Quarter
5.	Jason Project (All)	Integrated	3rd Quarter
6.	Oceanography (All)	Integrated-Webbed	3rd Quarter
7.	Graphing--Soc. Studies, Science, Math	Threaded	All Year
8.	Newspapers in Education All--Art	Webbed	4th Quarter

FRANKLIN MIDDLE SCHOOL

Integrated Instruction

Grade 8

House B

List the eight integrated learning activities your team has been involved with. Also, indicate the type (Fogarty) model that was used and when you taught, or plan to teach the unit. Please star the activity that was connected with an Allied Arts Department or class. Please return to Diane Wesner by April 19, 1994.

	Title	Type Model	Date Implemented
1.	Daily Oral Language	Webbed	September 7th
2.	Microscope	Integrated	September 15th
3.	Native American	Shared Webbed	November 29th
4.	Civil War	Shared	October 18th
5. *	Multi-cultural	Shared Webbed	January 24th
6. *	Industrial Rev.	Webbed	January 4th
7.	WWII	Threaded	April 18th
8.	World Problems	Webbed	April 5th

FRANKLIN MIDDLE SCHOOL

Integrated Instruction

Grade 8

House A

List the eight integrated learning activities your team has been involved with. Also, indicate the type (Fogarty) model that was used and when you taught, or plan to teach the unit. Please star the activity that was connected with an Allied Arts Department or class. Please return to Diane Wesner by April 19, 1994.

	Title	Type Model	Date Implemented
1.	Letters to Governor Hinckle	Integrated	3rd Quarter
2.	Animal Reports	Connected	1st Quarter
3.	Rain Forest	Threaded	2nd Quarter
4.	Dances With Wolves	Integrated	2nd Quarter
5.	Anne Frank/WWII	Shared	4th Quarter
6.	Industrial Revolution	Fragmented	3rd Quarter
7.	Genetic Survey	Sequenced	1st Quarter
8.	Madison Zoo	Webbed	4th Quarter

9.	Slave Dancer	Webbed	2nd Quarter

Appendix P

Thinking Logs
of
Sixth Grade Math Students

NAME Ben Vobian

THINKING LOG

1. What was the role you had in your small group?

[✓ ORGANIZER] CHEERLEADER CHECKER RECORDER

2. What did you say and do in your role?

I said, the problems or read them

I did I sort of butin on Mandy on the last problem

3. How did your group solve the first problem?
   - a. First, we added 12+4=16 To figure out how many cups after lunch
   - b. Second, we x 16x2=32 to figure out the total amount of cups
   - c. Next, we labeleled 32 cups
   - d. Then, we went on to #2
   - e. Finally, we

4. What was the first thing your group did when you started the second and third problems?

We made a diagram or chart.

5. Name 2 things your group did well in working together.
   - a. we worked well on asking each other if they knew the strategy to use
   - b. we worked together and compared answers.

6. Name 1 thing your cooperative group could do better.

We could not talk as much.

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NAME Shawn A.

THINKING LOG

1. What was the role you had in your small group?

ORGANIZER CHEERLEADER CHECKER [✓ RECORDER]

2. What did you say and do in your role?

I said, "Let's get this done, come on" (I tried to let us stay on task)

~~I did~~ I wrote down promblems to find the answers (also wrote down answe

3. How did your group solve the first problem?

a. First, we decidded # who would read

b. Second, our group added 4+12=16 to se how many cups we should se out wit

c. Next, we added 16+16 and got 32

d. Then, Thats how many cups the girl had at the beginning

e. ~~Finally, we~~

4. What was the first thing your group did when you started the second and third problems?

—

5. Name 2 things your group did well in working together.

a. There was no putdowns

b. we all tried to help each other

6. Name 1 thing your cooperative group could do better.

keep on task all the time

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NAME Katie G.

THINKING LOG

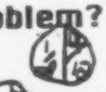
1. **What was the role you had in your small group?**

ORGANIZER CHEERLEADER CHECKER [✓ RECORDER]

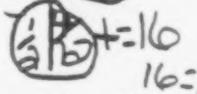
2. **What did you say and do in your role?**
I said,

I did the job of making sure the problem was written down

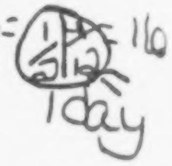
3. **How did your group solve the first problem?**
   a. **First, we** made a diagram



   b. **Second,** added 4+12=16



   c. **Next,** we figured out that half = 16



   d. **Then,** We added 16+16=32

   e. **Finally, we**

4. **What was the first thing your group did when you started the second and third problems?**

5. **Name 2 things your group did well in working together.**
   a. keeping on task
   b. positive comments (no putdowns)

6. **Name I thing your cooperative group could do better.**
not spend so much time on 1 problem

NAME Emily S.

THINKING LOG

1. What was the role you had in your small group?

ORGANIZER [✓ CHEERLEADER] CHECKER RECORDER

2. What did you say and do in your role?

I said, ra ra sis com ba, good we got the anwser.

I did jump up and down.

3. How did your group solve the first problem?

a. First, we read the problem

b. Second, thought how many double peanuts there were, how many triples, how to get (78)

c. Next, started guessing and checking.

d. Then, we talked about how close we were.

e. Finally, we got the anwser

4. What was the first thing your group did when you started the second and third problems?

Read the problems

5. Name 2 things your group did well in working together.

a. everyone wrote down the problem

b. everyone tried to figure out the problem.

6. Name 1 thing your cooperative group could do better.

everyore understanding how to do the problem.

NAME Susan V.

THINKING LOG

1. What was the role you had in your small group?

ORGANIZER [✓ CHEERLEADER] CHECKER RECORDER

2. What did you say and do in your role?

I said, good job

I did
problems

3. How did your group solve the first problem?
   - a. First, we were trying to decide what plan to use
   - b. Second, we found the plan that we decided to use
   - c. Next, we added the numbers that were in the problem
   - d. Then, we reread the problem.
   - e. Finally, we got the answer to the problem.

4. What was the first thing your group did when you started the second and third problems?

Found the plan for each one.

5. Name 2 things your group did well in working together.
   - a. cooperating
   - b. helping

6. Name I thing your cooperative group could do better.

settle down.

Appendix Q

Hypermedia Project
of
Learning Disabled Students

COMPUTER GAME EVALUATION

Thank you for taking the time from your busy schedule to join us for the *World Premier of "The April Fool's Joke".* *Please take a few minutes to* evaluate the overall project, the students and the activities of yesterday's events. Thank you for helping make this project special for the students.

OVERALL PROJECT:

Objective for the project:

1. Students will design a computer game using the literary elements of setting, character, description, and narrative.

2. Students will develop a basic awareness of the use of hypercard designing and testing a computer game.

3. Students will utilize problem solving skills to create a computer game using hypercard.

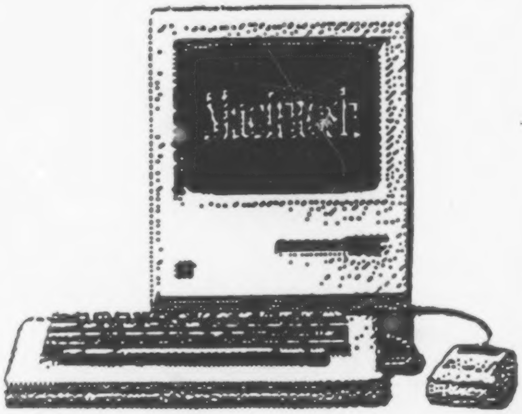
How will does the finished product reflect the objectives of this unit?

very well fairly well not at all

What parts of this project did you like?

What parts of this project do you feel need improvement?

Please list any suggestions you have to make this a better learning experience for the students.



Student Evaluation

Which student did you work with?

How well did this student communicate during the game?

Very well fairly well poorly

How well did this student listen during the game?

very well fairly well poorly

How well did this use cooperative problem solving skills during this game?

very well fairly well poorly

The Premier Party

Do you feel the party was an appropriate educational activity for these students? Why or why not?

What suggestions do you have to help make this a better experience for the students?

Would you be interested in participating in a activity of this nature in the future?

Evaluation:

Students will be evaluated on the following:

1. Did the student complete the composition workbook pages as assigned?
2. Did the student work to the best of his/her ability?
3. Did the student participate appropriately in class activities?
4. Did the student turn in a computer final draft?
5. Did the Hypercard stack created by the student have at least 2 buttons?
6. Did the Hypercard stack created by the student fit with the class expectations for the computer game?
7. Did the student play and solve the computer game?

Appendix R

Computer Journal
# of an
Eigth Grade Learning Disabled Student

Computer Journal

[redacted]

1994 wednesday

Wordking on computers is Vary Boring. Becaus I hate computers. Thay shud have The Keys in ABc order.

2/p Monday Fedruary 7, 1994

The computer game activity. We are working onis. fune Becons we have to find BseBall cardes.

Tlue-Sday Febouary 8 1994
For part of the computer Game I would like to not Do it

Comruter Jowinal. I think writing is. fun I Don't writing vary good. writing is fun to Drowing

Thursday February 10, 1994
my biggest Strength when
writing is, when mick is playing.

6/10 Monday Febrwary 14 1994
we worked on Since

Tuesday Fedwary 15 1994

yeaster day I felt the
feast we ~~took~~ was
Boring. Becaus It was easy
It was Stoped. 10

Wedneday Febwary 16 1994

The moust frustratios
thing about using the
computer is, The
keys are not in ABC oder.
The computer have to many
things to Do for it to Be
read.

Fedruary 17 1994
computer Journal learning
about computers 5 [illegible]
Decause Nothing is
lerning about computers

February 21 1994
Friday in the maclab I
Learned nothing n-themak [illegible]

Wednesday march 2 1994
when the sub was here
I Did reading and fooled
around. And made snow
with the desks [illegible] the
vent. And threw air plans.

Thursday The most frustrating
thing about this project is
[illegible] the person
and thinking to [illegible]
to be for [illegible] game

Appendix S

Journals

of

Seventh Grade Language Arts Students

LAURA

#25,
10-6 what are your feelings on Michael Jordan's retirement today? what would you say to him?

I feel that he has done all that he can. He is one of the best basketball players ever He has achieved many goals peope can only dream of reaching. I would say to him that his decision is okay, and that he achieved so much and he will always be remembered. I would also say that he must have made the right decision for him and that only he can make his decisions.

I respect Michael's decision, I would say, "Michael you have done your duties, youre a basketball legend, it is youre decision, people will have to accept it

#22
10-1 What you are speaks so loudly, I cannot hear what you say
- What does this mean to you?

It means that people get more out of your actions than what you say. This means that people judge you more by how you act than anything you say. So you should always think about what you're going to do before you act because people judge you by your actions. This is a saying that I have heard - Actions Speak 1000 words. Plus people will be more concerned with how you look more than what you are saying.

#35

10-20 Tell me your favorite part of the Helen Keller story and why.

My favorite part of the Helen Keller story was when she understood what words meant. I liked this part because she finally seemed like a human being not a wild animal and it also meant that she could actually learn how to spell and communicate.

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#36 What will life be like in the year
10-21 2156? What will School be like

I think that life will be full of electronic and automatic things. I think people will not walk very far because there will be moving walk ways. I think there will be a higher education level in school because theyre will be more technology for things to learn more advanced. I think theyre would be less crime because theyre would probably be better security systems, better gun & other objects scanners, and a better police force. The police force would be better because they could have monitors in lots more places

#53. What are the qualites of a good
12-2 friend? What can you do to be
a good friend to someone.

The qualities are honest, caring, trustworthy, responsible, good secret keeper

I can be nice to them and help them when theire in trouble. I would keep secrets that they want me too. I would spend time withe them and listen to them.

Some more qualities are friendly hardworking, and funny.

Laura!
This is an
excellent journal!
I applaud your
good work.
Grade A+

#108 List 10 things that you think of during
3-7 spring time

1. I think of the summer!
2. new grass smells
3. I think of going swimming
4. I think of hot weather.
5. I hear all the birds
6. I think of wearing shorts
7. I think of the taste of ice cream from Frostie Freeze
8. I think of the taste of grilled chicken
9. I think of being able to be outdoors
10. Mostly I think of summer during spring.

#109. Create a poem using yesterday
3-8 spring words

Spring

In the spring I dream of summer
I dream of the hot weather & swimming
In the spring I heard the birds
chirping happily
In the spring I think of having
nice, cool ice cream & wearing shorts
In the spring I think of summer.

EMILY

10-8 What difficulties does a blind person have on an ordinary day? Well to begin, I don't know anyone blind. So, I don't really know much about it. But they might have troubles with friends. By that it means that their friends would think that just because they are blind they cant do something.

10-11 If you are standing on the lawn or curb in front of your house descripe what ~~would~~ you would see. I would see a big window. It goes in from my living room. I would see the window leading to my room. There is a valance in it. I would see a brown house. I might see a garage door opened. I would see dirt maybe. I would see 2 cars in a driveway if both parents were home.

10-12 What do you know about Helen Keller? I saw the movie, so I know alot about her. It was a sad movie. I cried in it. It is sad how she can't see. And the spases are so sad. The struggle she has to do is a miracle.

10-14 Entry of your Choice.

I would like to talk about school. I really like school. It can be fun. Although, ~~you~~ I think that to many people judge you on your clothes, prettiness, and how wealthy you are. I myself, can't say I don't judge people on how they look, etc. But I know that I don't do it that much. And so many people do it, it makes me sick..

10-13 What was it like being blind.

I thought being blind was very educating experience. I think it made us realize what advantages, seeing people can have. I feel very sorry for blind people. I know I probably shouldn't say that, but that's how I feel. I think all seeing people want to help blind people. I hope I am never blind. But if I am I would like to do things by myself

10-15 I am going to spend my weekend .... By tonight probably nothing. Sat. I will sleep in a little late. Then I will (or might) go to my sister's swim meet. Later I will probably do nothing also. On Fri. I am going to a movie and a friend is spending the night. On Sun. I will go to a veterinary convention.

10-18 The object which I want to save are my ring. I would treasure this because my grandparents gave it to me. That's because my grandparents got divorced. I'm really upset. I never thought something like this could happen.

10-19 What is your favorite commercial

My favorite commercial is the Johnson & Johnson commercial. The baby is so cute. I ♡ Babies. The sounds she makes is cute too. I hope that if I have a baby she is as cute as her. I would love to meet such a cute baby.

11-30 What are some of your favorite recreatio
activities during the cold winter months
I like to ice skate. I also like to
make snowmen or forts in the snow
I will go sledding in the winter
with my cousins. Yet I still like
to sit in sweats cuddle up in
blankets, eat hot chocolate, and
watch a fire. It is so nice to
also watch the snow go by.

12-1 What class choices have you made for
8th grade? I have chosen french
I took this class last year. I
also might take band. Or I might
take the computer class. But I won't ta
tech ed.

12-2 What are the qualities of a good
friend? What can you do to be a good
friend to someone. That they are
nice, understanding, funny. I could
be the same things. I could tell them
they could talk with me anytime.

2-23 Describe your feelings when you found that you did or didn't pass the test? Well, I felt kind of stupid and disappointed at first. I understand know, though, how they feel when someone makes fun of them.

2-28 Did you enjoy our guest speaker? Describe some of your feelings. What part of her presentation was the most difficult? She was O.K. I felt nervous and scared. When she asked all of the questions.

3-2 Have you ever been teased before? What were you teased about and how did it make you feel? Yes, I have. I was teased about in 3rd grade I wore a jean skirt, a white turtleneck, and a floral vest. Those 2 girls were teasing me about that because I was dressed like that because it was picture day. I felt like I should go home and change my outfit because it wasn't fit to ~~[illegible]~~ their opinion. I know it still ~~[illegible]~~ goes on and everything that people won't be friends with you because you haven't got ~~the~~ right clothes, you don't smoke or drink or because you havent done (or gone out) stuff with guys.

5-4 Sunday is Mother's day! What Wonderful thing do you have planned for her? Well usually my dad and sister give my mom breakfast in bed. But this year were having friends spend the night. But maybe we'll do it again

5-5 This week is teacher appreciation week. What can you do to show your teachers that you appreciate them? Well, I will try not to talk as much. Also, I will bring them a treat.

5-6 Is Mr Dean sane or insane? Tell me why? Well I think he's both. Some days he's O.K. & some days he's wild! But I guess that's the way he is.

SARA

9-14 If I could change one thing about our world it would be to have world peace because then there wouldn't be any wars murderers, guns etc......

9-15 My Description of some one in my family would be about my sister- Jessica she's 5' 1" 130lbs. Kind of pudgy rather mean and rude. She has long blonde hair (dishwater blonde) uncharacteristicly colored eyes and a short stubby nose.

10-12 I noticed when I was blind in class would have to be mostly noises and picking out other voices. Also I was afraid I would knak in to something or get hurt.

10-13 Entry for today was done on Monday. (see last page)

10-14 The best book I ever read would have to be The Christmas Killer by Patricia Windsor. It was about a [illegible] killer who was tormenting a girl, but the bad part is last year I lent it out to someone and they didn't return it also I can't remember who I lent it to.

10-15 I am going to spend my weekend by going to the mall on Saturday to browse around and after church on Sunday we are going to make lots of Halloween cookies. Also we are going to clean house. (oh boy!)

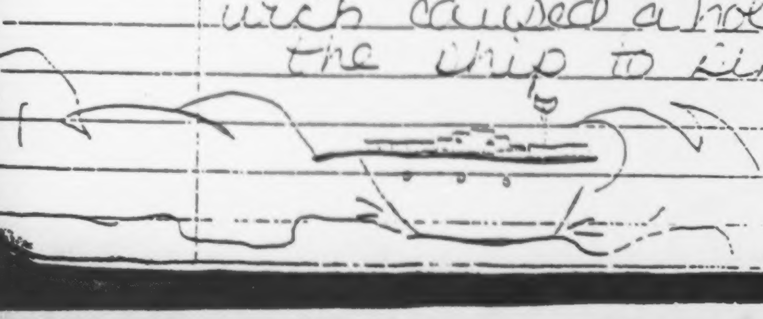
Journal

11/3 I wish I had the courage to go in an airplane (I'm [illegible] horribly afraid of heights!) But then of course, it would also be good to just be able to walk up an open staircase without freaking out (at school I walk by the wall, never by the rail!)

[illegible] 3 to 5 events that Charles Dickens wanted to stress were....

1. Scrooge was mean
2. Morley was dead (Scrooge's old partner)
3. That Scrooge was stingy with his money (he wouldn't give to the poor)
4. He lived alone in a huge, empty house.
5. He didn't like Christmas. (Everytime people said Merry Christmas, He said Bah, Humbug.

11/9 My theory is that at the [illegible] of a ship hit bottom and scrapped which caused a hole which caused the ship to sink.



1/7 = I think in Stave 2, the last ghost will come (the ghost of Christmas past) and try to get Scrooge to change his ways.

The ghost of Christmas Past would probably show me the Christmas of the year 1990 when me and my whole family went Christmas caroling at a nursing home to cheer up the people who don't get much for Christmas.

1/14 The entry of my choice would have to be about the movie the Muppet Christmas Carole (5 things I like about it!)
1. I love puppets
2. I think it's very funny
3. I love Kermit The Frog
4. It's better than reading the story
5. It's just all around fun!

1/9 We have hunting seasons to control the population of animals.

My thoughts are that although I would never, ever kill any kind of animal, I believe it's important so the animals don't starve to death because there are too many.

2-8 4 prep. phrases
1. I ran between the buildings.
2. I looked above my head.
3. I ran below the bridge.
4. I drove my car across the long and wide field.

2-9 Yes, I cook at home and my favorite thing to cook is peanutbutter cookies (Theyre my speciality)

2-10 Probually the ma s monster I'm most like is Jason because then I'd have the legal right to kill my brother and sisters (just kidding, actually I no idea)

2-11 1- that my friend(s) have a long and happy life
2- that my family will get alon well and stick together throug everything
3- peace on earth.

4-7
- Flowers
- Trees
- Bugs
- Robins
- green grass
- baby animals
- easter
- birds chirping
- butterflies
- green

Springtime

4-8 Flowers, Flowers everywhere.
Treetops swaying. Children playin.
Birds singing. Churchbells
ringing. Spring is in the air!
Bees humming. Easter's coming!
Spring is in the air.
Bambi's prancing. Winds a-dancing.
Spring is here today!

By S.E. Peabody

Excellent

4-11 The most difficult thing about researching my topic is probually finding facts on the different types of whales

4-12 The entry of my choice will be my 10 favorite animals
- dogs
- cats
- guinea pigs
- ferrets
- rabbits
- pigs
- horses
- lizards
- spiders
- hamsters

JENNI

10-13 I see I gray-blue house and garage with white trim. It has a black roof. It is one story. I see two trees with toilet paper stuck in them. In front of the house there is a purple-plum tree and little bushes. Some of them have flowers with a white petals and a yellow center. On the other side of the house is a tree, about 4 feet tall with green and white leaves. There are leaves all over the grass. There is a red Toyota Corolla in the garage and a white '98 in the garage. There is a big window. You can see a plaid couch and a picture of phensants on the wall. There are two end tables on either side of the couch with a gold lamp with a off-white shade on it. There is tan carpet and white walls. The house has blackshutters, and you can see the other houses behind it. There is a door and two windows on the other side of the door

Conf'

4-6 On Wendsday I went to Chicago and saw the Shedd Aquarium. The next day we went shopping at NikeTo and Water Tower Place. I bough a ESPRIT shirt. The next day we stayed at our hotel.

4-7 Flowers
Strawberries
Track
Ice Cream
Frostie Freeze
Robin
Spring Cleaning
Birthdays
Summer
Family Renions

4-8 Spring flowers all around
Little robins on the ground

this is good!

Appendix T

Sixth Grade Social Studies:
Self Evaluation Form
Packet for
Cooperative Learning Groups

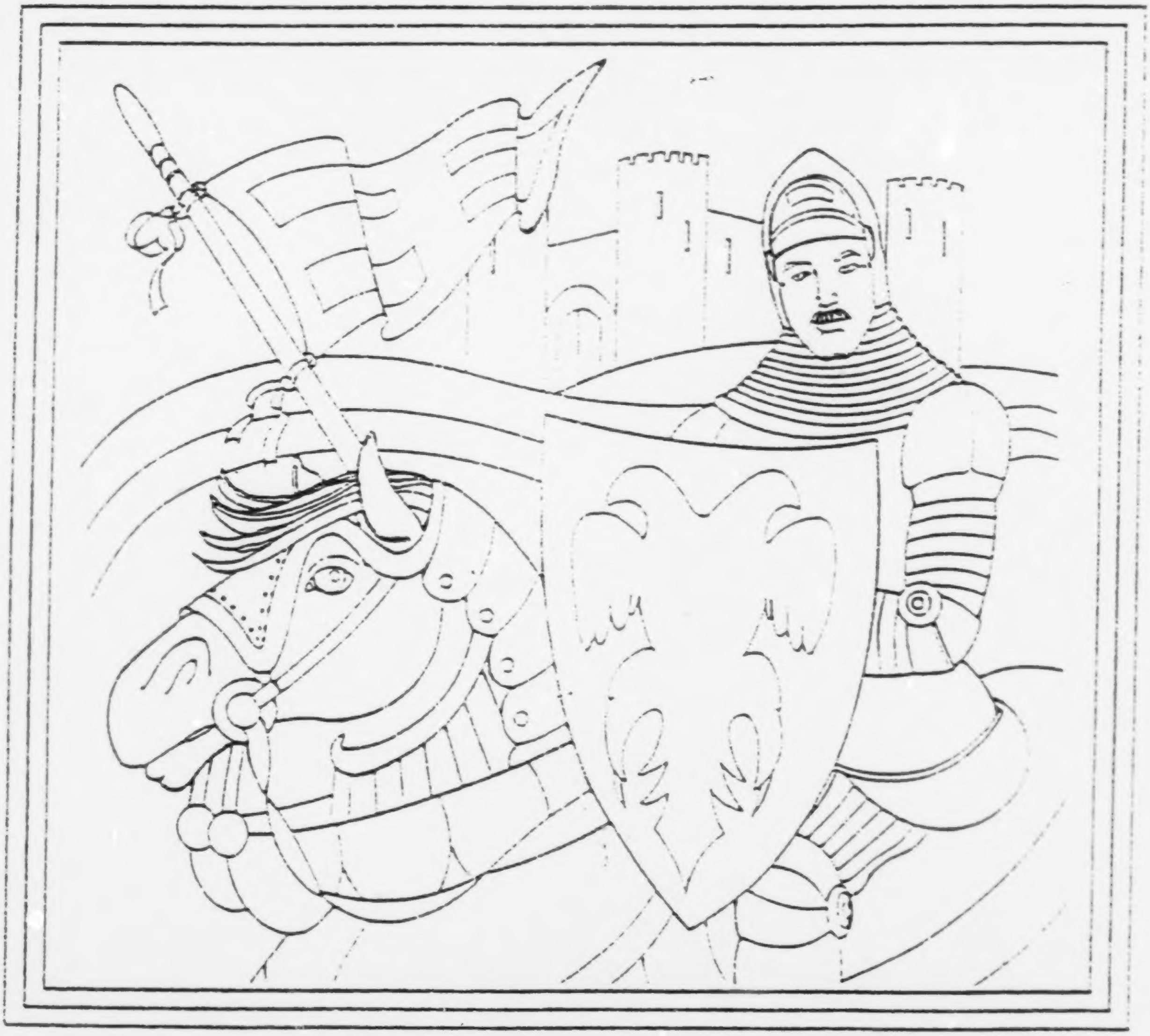
Middle Ages

Self-Evaluation For Cooperative Learning Groups

Name of Group ______________________________ Hour __________

Date	All Members Present	In seat at bell	Materials for SS	Formed group quietly	Encouraged everyone to participate	No put-downs	Encouraged members to do their best	Shared Decision Making	Clean-up Area	Desks or chairs straightened	Total Points
	0 5	0 5	0 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 5	0 5	
	0 5	0 5	0 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 5	0 5	
	0 5	0 5	0 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 5	0 5	
	0 5	0 5	0 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 5	0 5	
	0 5	0 5	0 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 5	0 5	
	0 5	0 5	0 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 5	0 5	
	0 5	0 5	0 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 5	0 5	
	0 5	0 5	0 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 5	0 5	
	0 5	0 5	0 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 5	0 5	
	0 5	0 5	0 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 5	0 5	
	0 5	0 5	0 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5	0 5	0 5	

The Middle Ages



A COOPERATIVE LEARNING UNIT

NAME OF GROUP______________________________

MEMBERS OF GROUP___________________________

____

____

COOPERATIVE LEARNING GROUPS

SECOND HOUR

Goths	Huns	Vandals	Barbarians
Forrest	Brad	Carlos	Jeremy
Alecia	Erica	Cassi	Rachel
Katie	Laurie	Amanda	Becky
Robert	John	Kevin	Matt

Vikings	Explorers	Knights
Jason	Daryl	Lee
Sarah U.	Jessica B	Jennifer J.
Justina	Sara S.	Luke
Ian		Cory

THIRD HOUR

SERFS	SQUIRES	APPRENTICES	JOURNEYMEN
Jamie	Blake	Joe	Mike
Chad	Sean	Nathan	Peoung
Michelle	Tiffany	Aubrey	Melissa
	Heather	Kari	Audrey

CRUSADERS	BISHOPS	MONKS
Josh R.	Sotero	Jim
Maren	Andrea	Tracy
Christina	Crystal	Becky
Katie	Josh P.	

Your groups will be working on the following skills during this unit:

1. Forming groups quietly
2. Encouraging everyone to participate
3. No Put-downs
4. Encourage all members to do their best work
5. Shared decision making

MIDDLE AGES UNIT
COOPERATIVE LEARNING

NAMES OF STUDENTS IN THE GROUP______________________

____

Lesson I

____Read pages 203-209.

Europe After the Fall of Rome

Do Understanding the Lesson: Recalling Facts 13 Pts

____Complete a timeline of the Middle Ages 10 Pts

____Read A Famous Ruler and do Crossword Puzzle 7 Pts

____View People and Migrations Filmstrip

Take notes, study, and 1 person take quiz 7 Pts

____You will be assigned one of the Barbarian tribes.

Each member of your group will have a job to do. One will be a researcher, another a mapmaker and the other the presenter. Prepare and present an oral report to the class using maps to show where the invaders came from, what parts of the Roman Empire they settled in, and the size of the territory they eventually controlled. 10 Pts

Lesson II

____Read pages 210-215.

Life in the Medieval World

Do Understanding the Lesson: Organizing Facts 16 Pts

____View Society filmstrip and take notes, study and 1 person will take quiz 12 Pts

____Identify the Parts of a Castle 16 Pts

____View Towns and Cities filmstrip and take notes study and 1 person will take the quiz 11 Pts

____Identify the Weapons of the Middle Ages 17 Pts

____View video Medieval Manor Time 10 Pts

____Read A Time of Knights and use context clues to identify the role and development of a knight 12 Pts

____View video Medieval Knight Time 10 Pts

____Identify the parts of a suit of Armor 14 Pts

____View Medieval Guilds Time 10 Pts

____Your cooperative learning group will pretend they are representatives of a guild. You are meeting to create a council to govern the affairs of your medieval town. Your job is to prepare a short set of basic laws that will govern life in the town. Be ready to present your laws to the class. Your teacher will assign you one of the following guilds: blacksmith, butcher, barber, carpenter, stonemason, weaver, tailor, tanner or miller. 10 Pts

Lesson III

____Read pages 216-219.

An Age of Faith

Do Understanding the Lesson: Relating Cause & Effect 8 Pts

____View Religion filmstrip and take notes, study and 1 person will take quiz 8 Pts

____Identify the people of the Middle Ages 9 Pts

____View Medieval Crusades 10 Pts

____You will be assigned to work with another cooperative learning group. You are going to imagine that the First Crusade is departing the Holy Land and a TV reporter is giving an on-the-scene report. Assign any of the following roles: reporter, Pope Urban II, TV anchorperson, a knight with a large prosperous fief, his squire, an escaped serf, an apprentice blacksmith, a knight whose manor has just been destroyed in a Viking Raid his squire, a trader in gold and jewels, wives, and family members of all of the above. The reporter interviews each of the people, asking how he or she feels on this historic occasion. 15 Pts

Lesson IV

____Read pages 220-227.
National Monarchies Begin in Western Europe
Do Understanding the Lesson: Recalling Facts 14 Pts
____View David MacCaulay's video entitled Castle. 10 Pts
____After reading THE MAGNA CARTA on page 222, pretend that your group is a council. Work together to brainstorm, write, and present a list of students' rights that you would like guaranteed under the class Magna Carta. To present the document, dampen your paper with lemon juice before writing. Let the juice dry, then hold the paper near - but not directly on - a light bulb. This will give the paper an aged appearance. Neatly write your list of rights with a black marker or calligraphy pen. Present them to your teacher. 15 Pts

Review

____Do Reviewing Chapter Vocabulary 12 Pts
____View National Geographic A Historical Overview of the Middle Ages 10 Pts
____Do Using the Vocabulary 1-10, page 228 10 Pts
____Do Summarizing the Chapter 12 Pts

Test

____Take an individual test of Chapter 8.

Earning Additional Points for my Cooperative Learning Group:

____Read and research information about the shields or coats of arms that were used throughout the Middle Ages. Each member of the group will design a coat of arms to depict their interests or family history.

____Use a cardboard box or wood and design a replica of a medieval castle.

____Read the ballad entitled Lord Randal with your group. Do the questions to accompany the reading. Be ready to present the poem to the class.

____Read the ballad entitled Barbara Allen with your group. Do the questions to accompany the reading. Present the poem to the class.

____Design a Medieval Times Bulletin Board. Design a rough draft on a piece of unlined paper and present it to your teacher before going ahead with your plan.

____Read the Knight's Code in your group. Memorize it and present it in front of the class.

MY COOPERATIVE GROUP HAS EARNED ______ POINTS.
(Please use a calculator and add the earned points)

Appendix U

Thinking Logs
of
Sixth Grade Math Students
at
Conclusion of the Project

THINKING LOG

4-8 TROY, TREY, TRAVIS, AND TODD ARE BROTHERS. TROY IS 1/2 AS OLD AS TRAVIS. TRAVIS IS 3 YEARS YOUNGER THAN TODD. TODD AND TREY TOGETHER ARE 17 YEARS OLD. TREY IS 8. WHO IS THE YOUNGEST?

4-11 FELIPE'S TYPEWRITER STICKS WHEN THE 7, 8, OR 9 KEY IS TYPED. IF HE TYPES EACH NUMBER FROM 100 TO 200, HOW MANY TIMES WILL HIS TYPEWRITER KEYS STICK?

4-12 NEILSON ELEMENTARY SCHOOL RAISED $2,516 IN A JUMP ROPE FOR HEART FUND-RAISING EVENT. WHAT WAS THE AVERAGE AMOUNT RAISED BY EACH OF THE 68 STUDENTS PARTICIPATING?

4-13 ACCORDING TO A RECENT COURT DECISION, A MINOR MAY NOT SPEND MORE THAN 48 HOURS A WEEK IN SCHOOL AND ON A JOB. MELODY GOES TO SCHOOL FROM 7:45 AM TO 1:15 PM EACH DAY, MONDAY THROUGH FRIDAY. SHE ALSO WORKS AFTERNOONS AT A SHOE STORE. WHAT IS THE MAXIMUM NUMBER OF HOURS SHE IS ALLOWED TO WORK EACH WEEK WHILE IN SCHOOL?

4-14 A 3-STORY BIRD HOUSE HAS 4 ENTRANCES IN THE BOTTOM FLOOR, 3 PASSAGEWAYS BETWEEN THE SECOND AND THIRD FLOORS. A MOTHER BIRD BUILDS HER NEST IN THE TOP FLOOR. HOW MANY DIFFERENT WAYS CAN SHE GET TO THE TOP FLOOR FROM THE OUTSIDE?

4-15 ON THE PLANET MERCRON, 7 OUT OF EVERY 20 CRETURES ARE ANIMALS, 8 OUT OF THE 20 ARE HUMANS, AND THE REST ARE ROBOTS. THERE ARE 96 HUMANS ON MERCRON. HOW MANY ROBOTS ARE THERE?

4-18 YOKO BUILT A TOWER OUT OF BLOCKS. THE TOP OF HER TOWER IS SHOWN IN THE ILLUSTRATION. IF THE TOWER HAS 10 LAYERS, HOW MANY BLOCKS DID YOKO USE FOR THE BOTTOM LAYER?

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4-20 MR. WONG SAVED BONUS-POINT COUPONS FROM THE GROCERT STORE TO GET 15 DIFFERENT 3-POINT COUPONS AND 15 DIFFERENT 5- POINT COUPONS. HE COLLECTED 22 COUPONS FOR A TOTAL OF 86 POINTS. HOW MANY 3-POINT COUPONS DID HE COLLECT?

4-21 JASON HAD $37.69. HE LOANED HIS SISTER $15.00. IF SHE PAYS HIM $0.05 INTEREST ON EACH DOLLAR SHE BORROWED, HOW MUCH MONEY WILL HE HAVE WHEN HE IS REPAID?

4-25 LAST WEEK WAS THE RAINIEST WEEK OF THE SUMMER. ON MONDAY WE HAD 4.24 INCHES(in.) OF RAIN. ON TUESDAY WE HAD 1.7 in., AND ON FRIDAY AND SATURDAY WE HAD 0.32 in. EACH DAY. HOW MUCH RAINFALL DID WE HAVE LAST WEEK?

4-26 TO MAKE A VERY STRONG FREEZER BAG, TWO SHEETS OF PLASTIC WITH A COMBINED THICKNESS OF .05 IN. HAVE BEEN BONDED TOGETHER. THE FIRST SHEET IS .0345 IN. THICK. WHICH SHEET IS THICKER? HOW MUCH THICKER?

JUSTIN

My Thinking Log For Math

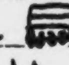
By: Justin [redacted]

4/8/94 - Work backwards. Since Trey is 8 and Todd and Trey is 17 years old 17-8=9 so Todd is 9 Travis is 3 years older than Todd so Todd is 12. 9+3=12 Now Troy is ½ as old as Travis so 12÷2=6 so Troy is 6. Trey=8/Todd=9/ Travis=12/Troy=6/ so Troy is the youngest.

4/11/94 - Okay we have to make a pattern or chart. Now I have to figure the 3 numbers will stick for each group of 10s. So I have to find how many groups of 10s there are between 100-200, which is 10. We have to times 10 by 3 to get our answer. 10×3=30. So the typewriter will stick 30 times but we have to account for the groups of tens when those numbers are first. There will be 10 times for each set because there 1s the first numbers So thats another 30 Since 30+30=60, The typewriter will stick 60 times

4/12/94 - I have to make a number sentance. Since the total amount of money is $2516 and I have to find out how much the average is for the 68 students that participated in it would be 68)$2516 = $37. $37 would be the average for each of the 68 students.

4/13/94 - Okay I've got to make a number sentance. Since we have to find the amount of hours to work at the job we have to see how many hours there in for school. 7:45 a.m.-1:15 p.m = 5½ hours. Now times that by 5 to get hours in a week = 27½ hours Since she can only use 48 hours for school and work we have to see how many hours are left for work. 48-27½=20.5 hours left for work after school in the week.

4/14/94 - Now I have to make a diagram. The warehouse has 4 entrances from the outside . It also has 3 passage ways going from the 1st to the 2nd floor. And from the 2nd to 3rd floor there is 2 passage ways. Altogether there are 4 × 3 × 2 = 24 different ways.

4/15/94 - Use a number sentance. Since we have to find out how many times 8 goes into 96 because we have to find how many groups of 20 there are which is 96÷8=12. So there are 12 groups of 20. 12×20= 240 is all together of beings. Now we have to find out how many animals these are which is 7×12=84. 84+96=180 live beings 240-180=60 robots on the planet

4/18/94 Other side.

[redacted]

4/18/94 -Okay draw a picture and find a pattern. The pattern we have to find is in this . Oh! Start with 1 at the top and by 3 each layer you have to go down so it might look like this Now we have to add all these together to get the answer. 1+3+6+9+12+15+18+21+24+27=136 So 136 blocks were used all together. 136 Blocks This answer is wrong

1+3
3+3
6+3
9+3
12+3
15+3
18+3
21+3
24+3
27

We have to get a new pattern Oh 1+2+3+4+5+6+7+8+9+10=55 is the pattern that will get the answer.

4/20/94 -Okay we have to guess and check. Now lets Try 15×5=75/86-75=11÷3=, 10×5=50/86-50=36÷3=12/12+10=22/So he had 12 3 point coupon and 10 5 point coupons.

4/21/94 -Okay now we have to [redacted] make a number sentence. $15.00 she borrowed X .05 for each dollar owed she borrowed $15 so x that by .05 = 75¢ + 15.00 she owed $15.75. now ~~[illegible]~~ add 75¢ for the intrest of what he origanally had in $37.69+.75=$38.44

4/25/94 -Okay we have to make a number sentence I have to find out what to do to get the ans of how much rainfall they had last week. I have to add 4.25"+1.70"+.323" which equals 6.38

4/26/1994 -Okay we have to take the .05-.0345 to see how thick the other page is. The answer is .0155. So the answer is 0.0155. The first sheet is thicker and it is 0.19.

NICHOLAS

Thinking Log

4\8 1. work backwards Subtract 8 from 17 equa's 9 So if Trey is 8 then Todd is nine. If Travis is 3 years older then Todd and Todd is 9, 9+3=12, So Travis is 12 years old. If Troy is ½ as old as Travis and Travis is 12. Half of 12 is 6. So Troy is the youngest because Treys 8, Todd 9, and Travis is 12 so 6 is lower than all of these numbers.

4\12. 107, 108, 109, 117, 118, 119, 127, 128, 129, 137, 138, 139, 147, 148, 149, 157, 158, 159, 167, 168, 169, 170, 171, 172, 173, 174, 175 176, 177, 178, 179, 180, 181, 182, 183, 184 185, 186, 187, 188, 189, 190, 191, 192, 193 194, 195, 196, 197, 198, 199 First you Find all of the numbers Then you go through the list and find every 789. There is 60 789's.

4\12 I divided 68 by 25/6. Then I got the average. The average is 37 dollars raised by each person.

4\13 7:45
-4:15
12:00
1:15
1:15

5:30 at school each day

5. :30 7 10 48.00 20,30
x5 5 -27.30
25: 2.30 20:30

Find out howmany hours and minutes are between 7:45 and 1:15. Then Time 5x5 for the hour. Then times :30 minutes time 5. Add 25:00 + 2:30 You get 27:30. Subtract 48:00 from 27.30 and you will get 20:30.

4V4 Mutiply the 4 entrances and 2 passage ways because the entrances are at the bottom and the pasages are at the bottom. That equals 8. Mutiply the 3 and the answer is 24ways.

4\15 I make a chart to find the answer.

$\frac{8}{20}$ $\frac{16}{40}$ $\frac{24}{60}$ $\frac{32}{80}$ $\frac{40}{100}$ $\frac{48}{120}$ $\frac{56}{140}$

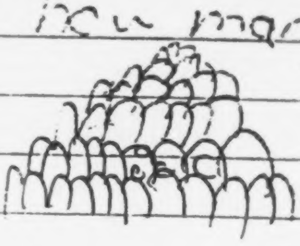
$\frac{64}{160}$ $\frac{72}{180}$ $\frac{80}{200}$ $\frac{88}{220}$ $\frac{96}{240}$

Now I will make another chart with the animals to 240

$\frac{7}{20}$ $\frac{14}{40}$ $\frac{21}{60}$ $\frac{28}{80}$ $\frac{35}{100}$ $\frac{42}{120}$ $\frac{49}{140}$ $\frac{56}{160}$

$\frac{63}{180}$ $\frac{70}{200}$ $\frac{77}{220}$ $\frac{84}{240}$

Now I will add 84 +96 and get 180. Now I will subtract 240 from 180. That will equal 60. That is how many robots there are.



4/26 First it said they both so if they were combined I divided 5 by 2 and got .025. Then I subtracted .0345 and .025. The first sheet was the thickest. The difference is .0095.

OOPS! Subtract first,
not divide!

NIKI

THINKING LOG

4/12/94 1. I got a calculator and divided $2516 by 68 and got $37. To make sure my answer was right, I multiplied $37 by 68 and got $2516. I then knew my answer was right.

4/13/94 2. First, I figured out how many hours she is at school in one day. From 7:45 - 1:15 is 5 ½ hrs. Then since she is at school 5 days a week for 5 ½ hrs, I multiplied 5 ½ by 5 and got 27 ½ hrs. Since she is only allowed to work and go to school for 48 hrs a week, I subtracted 27 ½ from 48 and got 20 ½. So Melody is only allowed to work 20 ½ hrs a week while in school.

4/14/94 3. For this problem, I will make a number sentence. I will count how many passageways from the bottom to the 1st floor. That is 4. Then I multiplied 4 by 3 because there are 3 passageways to get to the second floor. Then I multiplied 12 by 2 and got 24 because there are 2 ways to get to the 3rd floor. The answer is 24 ways.

4/15/94 4. First, I will figure out how many 20's are in 96. There are 4. If 8 of every 20 are humans than I have to multiply 4 by 8 and get 32. If 7 of every 20 are animals, than I have to multiply 7 by 4 because there are 4 20's in 96. 7×4=28. Then I will add 28 and 32 and get 60. After that I will subtract 96 and 60 because there are 96 creatures total, and 60 animals and humans. 96-60 is 36. There are 36 robots on Mercron. I just realized I did mine thinking that 96 was the total number of things on the planet. The correct answer is 60 robots.

4/21/94 5. First, I will multiply 15 and 5 because she borrowed 15 dollars, and she pays him 5¢ interest on every dollar. 15 multiplied by 5 is 75. Then I will add 75 cents to $15.00 and that is $15.75. Since she borrowed $15.75 with interest, I will add $15.75 to $37.69 and get $53.44. Jason will have $53.44 when he is paid.

THINKING LOG

4/25/94 6. Since you have to find out how many in. of rain there was, I will add. When I add the amount of rainfall for Monday, Tuesday, Friday and Saturday I get 6.58 in. So, there was 6.58 in. of rain last week.

4.24
1.7
0.32
+0.32
6.58

4/26/94 First I will divide .0345 by .05 because that's how thick the first sheet is. I get .69. Since .0345 is bigger than .69, the first sheet is thicker by .64 in.

The correct answer is the first sheet by .019.

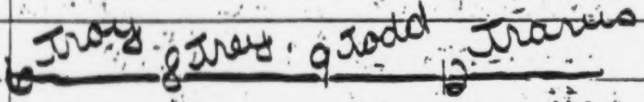
SARAH

Sarah

3

Thinking log 4/8/94

4-8-94 work backwards
Trey is 8 and together the
equal 17 so subtract 8 from
17 and get nine (9). Todd is 9.
Since Travis is 3 years older then
Todd you add Todds age and
since travis is older you
add 3. 9+3=12. Travis is 12.
Since Troy is ½ of Travis'
age, you find out what
half of 12 is. It's 6.



8, 9, 12 is greater than 6
So Troy is the youngest.

4-11-94 number sense, guess & check 4/11/94
If the 7,8,9 sticks from to
100 to 200. The 7,8,9 each
you [illegible] to ten. See how
many times ten goes
in to 100. It goes in
10 times. You have another
100 left. & you do the

same thing and get
10. add the two tens
together and get 20
Each number get stuck
10 times. Times 10 by 3
and get 30. add another
30 and know you get
60 for the answer.

9/12/94 Number sense 4-12-94
There were 68 students
who raised $2,516 altogether.
To find the average you
take 68 from 2516. The
average for each kid is
$37.00. [illegible]

4/13/94 Number sense first [illegible] 4-13-94
You see how many
couldn't [illegible] till [illegible] 3:15 = 6 hours [illegible]
get 30 minutes. Times 6 hours
and 30 minutes by 5
days cause Monday-
Friday.

4/14/94 Number Sence 4-14-94
The 4 enterances on bottom
floor. 3 passageways between 1&2
2 passageways between 2&3. the

couldn't get

First, I knew it was 0.5 inches. Than the first bag is .0345 inches Thick.

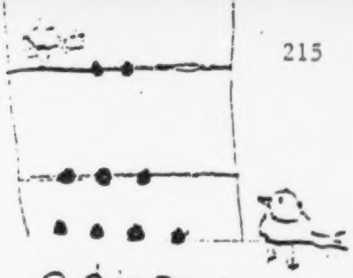
Wrong

.05
.0345
.0155

.0345
.0155
.0190

5

JESSICA



4·14·94

On tag: I think I should draw a digram
my digram should have 3 floors 2 on
the first floor 4 entrences 3 between
1, 2 floor & 2 between the 2 & 3.
Now I should x 4 × 3 = 12, and now
12 × 2 = 24. So she has 24 different
ways to get to her nest.

4·15·94

umm: I don't get it! Oh!!! 7 out of every 20
are animales 8 out of 20 are humans = 96
humans so 7 × 12 = 84 amales. NOW I'M
REALY STUCK! am i missing some
data? Maby 96 + 84 = 180. 180 is my
answer I guess!

12
× 7
84
96
180

wrong

Thinking Log

4-18-94

I think I should find a pattern. I should start from the top. The top is 1 then 3 then 6. Now I think × my number by 2 So then the blocks would go 12 then 24 then 48 then 96 then 192 then 384 and finilly 768. That sounds like alot of blocks. No. I think I should like 1+2=3+3=6+4=10+5=15+6=21+7=28+8=36+9=45+10=55. So I got 55 for my answer.

right

4-20-94

I don't get it: I think this is a guess and check. I don't know how to figure this out.

Answer: 12 three-point coupons

wrong

37.69
.25
38.44

correct

4-21-94

What is interest. I think I should – $37.69 from $15.00 So Jason [illegible] has $22.69. Then I should × 10 from .05 now I should + 15 + .76 so he will get payed $15.75 so ~~+~~ $15.75 to 37.69 = $38.44 is now how moch he has.

4·26·94

$\frac{345}{10{,}000}$

$- 1/50$

Wrong

First i should collect my numbers .05 and .0345 now i must change the numbers to fractions .05 to 5/100 a .0345 to 345/10,000 on 5/100 i must reduce 5÷5=1 and 5÷100:50 so it is 5/50 the 345/10,000 sheet is thicker. now i should - 1/5 from 345/10000 This does not sound right at all!